Telephony

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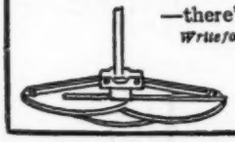

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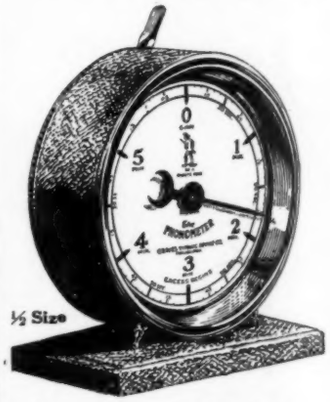

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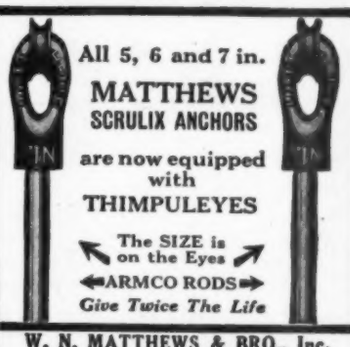

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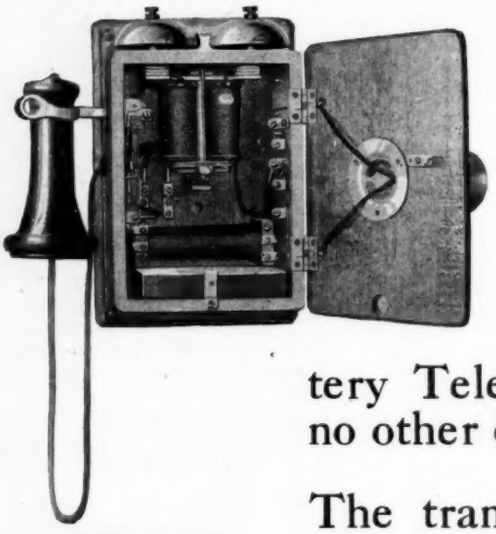

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Telephony.

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By the Way—

Railroad rates are to be advanced—and passenger rates are included.

That means that traveling salesmen will practice conservation in railroad traveling, not making trips if the business can be done otherwise.

Railroad travel is not necessarily essential for the traveling salesman. He can use the telephone toll facilities to save many railroad trips, to say nothing about the time saved. Using telephone toll lines for selling purposes enables the traveling salesman to extend the limits of his territory in addition to saving carfare, thus conserving manpower as well as railroad facilities. There should be an increased use of toll service. Is yours properly advertised and easily available for the use of the traveling man?

Standardization of Reports.

Multiplicity of reports to state and federal authorities or bodies is one of the banes of the telephone man's existence, so far as his business is concerned. The various state and federal bodies call for reports in which are embodied requests for information already on file with one or more of the departments. In other words, there is a great duplication of information required of telephone companies by both state and federal authority.

The railroads were confronted by this situation and a solution was worked out so that now the railroads use but one form of report—to the various state commissions and the Interstate Commerce Commission. In other words, the report blanks of the different bodies have been standardized. When the railroads make up a report for the Interstate Commerce Commission, their report to the other bodies is an exact duplicate of this one report.

Telephone companies, according to their location, are required to make up from three to a half a dozen or more different reports. As a matter of fact if one report were sent to the secretary of state's office and another to the Interstate Commerce Commission at Washington, the other state and federal bodies and commissions could obtain all the information they desired from the reports on file at these two places.

To bring this about necessitates that there should be a standardization of accounts so that the accounts of a company in the state of Maine, for instance, would be kept under the same system as the accounts of a company in California. At present there is not a great difference in the standard systems of accounting prescribed by the various state public utility commissions.

The elimination of duplicate bodies requiring reports would also aid in alleviating the present conditions. For instance, the data now being sought by the U. S. census department could very easily be obtained through the Interstate Commerce Commission and that body could issue the report. Thus but one federal body would deal with the industry.

The underlying remedy for eliminating the multiplicity of reports is the changing of the existing laws, both state and federal. State officials recognize that data may be obtained from reports that are on file at the state capitals, but the laws require each state body or official to have the companies make reports to them and that is likewise the case with the federal bodies.

The changing of the laws naturally is a function of both the state and national telephone associations and through them, of their individual members. The Ohio Independent Telephone Association has recognized the situation and is urging its members to see that men of ability are elected as their representatives in the law-making bodies.

Telephone men do not realize their political power. The influence which a state telephone organization can exert through its member companies and they, in turn, through their employes, is one that should be utilized in the interests of efficiency and conservation of time and labor. The state telephone associations through utilization of telephone influence can wield a power that will result in the election of big caliber men capable of understanding and rectifying evils of existing laws.

Intelligent and concerted effort is needed on the part of state and national associations to assure laws that will place the industry in a most stable condition.

This issue of "Telephony" is late in reaching you because of a strike among the press feeders of Chicago.

A Simple Cost Accounting System

Details of Cost Accounting System Which Has Proved Satisfactory in Plant of 2,000 Subscribers with Office Force of Three People—Standard System Would Enable Companies to Make Comparisons of Costs

By E. C. Constans

In TELEPHONY, of January 12, I explained how we kept our plant figures, so we could at any time show just what each dollar charged to plant represented in actual time and material. In this article the idea is carried along a little farther and it is shown just how these forms enable us to make up monthly cost sheets, revealing just what profit or loss is made on city, country and tolls.

Before going any farther, let me say right here that the method outlined is one that can be used in any small office. This is mentioned because we often read or hear of something that really appeals to us but do not adopt it for the reason that we say to ourselves, "we would like to put it into practice in our own plant, but have not the force to handle it."

This line of reasoning will not work in this case because all of the ideas that follow were worked out and applied in a small office—an office of three people who handle every bit of the office work in a company serving 2,000 subscribers on five exchanges.

By handling the work, I mean billing all rental and tolls, taking in the money, answering all correspondence, making of various cost statements and having plenty of time left to get up special sales letters, operating studies and to watch collections with an eagle eye. Therefore, if anything in this article looks good to you and you feel that you would like to adopt some of the methods outlined, do not hem and haw about whether or not your office force can handle it, for it can if you have any office force at all.

We have our linemen show on their work reports just where the work was performed. Say a man goes to one of our outlying exchanges to repair a line, his report reads like this:

"Repairing wire plant, Jonesboro country, three hours; auto, three hours; material used 50-ft. No. 14."

Then he has some troubles right in town which take him two hours, so he makes out another slip which reads like this: "Repairing equipment, Jonesboro city, two hours; auto, two hours; material, none."

Each lineman makes his report in this form and they come up to the office the first thing in the morning. We take the first report that covers the work in Jonesboro country, turn to our Jonesboro Country Repairs Wire Plant sheet (form described in TELEPHONY of January 12) and enter the time and material.

At the end of the month we have separate sheets covering "Repairs wire plant, Jonesboro country," "Repairs equipment, Jonesboro city, etc." Therefore, to find out what our labor and material expenses were in Jonesboro country, we simply take the sheets carrying that head, add them up and we have the dollars and cents spent during the month in keeping up our equipment in Jonesboro country.

The only other direct labor we have is the operating. A study can be made of this that will show the hours spent in handling calls for city subscribers, country subscribers and tolls. By dividing the city operating hours by the total operating hours, we get the percentage of the operating expense chargeable to city, but to illustrate:

Say you employ 10 operators, a supervisor and a chief. The operators work eight hours a day; therefore you have 80 operating hours. Your study shows that 40 operating hours are spent on city operating, 20 operating hours on country, and 20 on tolls. Dividing 40 operating hours by 80 we get 50 per cent chargeable to city.

Using the same methods, we find that the country should bear 25 per cent and tolls the other 25 per cent.

Now that we have our percentage figures, we simply take the total amount of money we paid to the ten operators, the supervisor and the chief, apply our percentage figures, and we have our operating costs divided into city, country, and tolls.

As our time and material sheets gave us our linemen's time division, and the operating study our operators' time division, we have all of our direct labor costs divided city, country and tolls. Our next step is to make a recapitulation of this. First, we take all the time and material sheets and list the labor costs like this:

Jonesboro City:	
Exchange lines	$ 20
Station equipment	30
Productive labor	$ 50
Repairs, equipment	$ 15
Repairs, wire plant	8
Station removals	2
Repairs, cable	3
Operating	220
Non-productive labor	$248
Jonesboro County:	
Station equipment	$ 12
Productive labor	$ 12
Repairs, equipment	$ 35
Repairs, wire plant	20
Operating	124
Non-productive labor	$179
Smithboro City:	
Station equipment	$ 26
Productive labor	$ 26
Repairs, cable	$ 12
Repairs, equipment	36
Other maintenance	8
Operating	175
Non-productive labor	$231
Smithboro Country:	
Repairs, equipment	$ 12
Repairs, wire plant	23
Operating	85
Non-productive labor	$120
Tolls:	
Repairs to toll lines	$ 45
Operating	210
Non-productive labor	$255

This recapitulation gives us a total of $1,121 paid out for labor during the month. Now we reduce the different amounts to percentages and get the following:

		Per cent.
Jonesboro city, ex. lines	$ 20	1.8
Jonesboro city, sta. eq.	30	2.7
Jonesboro city, non-productive.	248	22.1
Jonesboro country, sta. eq.	12	1.1
Jonesboro country, non-productive	179	15.9
Smithboro city, sta. eq.	26	2.3
Smithboro city, non-productive.	231	20.6
Smithboro country, non-productive	120	10.7
Tolls, non-productive	255	22.8

This gives us percentage figures showing each labor item in its relation to the total labor.

Work of any kind requires supervision—none of this work would have been performed unless there was an organization to direct it. Therefore to get the true cost of this labor, we must spread this indirect labor and expense over the direct labor.

This indirect will consist of officers' salaries, liability insurance, a portion of the insurance, rent, light, water used in the office, account books and forms, a portion of the clerks' salaries, etc. Say this amounts to $350 a month, on spreading this amount over our direct labor cost, we obtain the following:

	Direct labor cost.	Indirect labor cost.	Total labor cost.
Jonesboro city, ex. lines	$ 20	$ 6.30	$ 26.30
Jonesboro city, sta. eq.	30	9.45	39.45
Jonesboro city, non-productive	248	77.35	325.35
Jonesboro country, sta. eq.	12	3.85	15.85
Jonesboro country, non-productive	179	55.65	234.65
Smithboro, country, non-productive	120	37.45	157.45
Smithboro city sta. eq.	26	8.05	34.05
Tolls, non-productive	255	79.80	334.80
	$1,121	$350.00	$1,471.00

There is still a portion of the indirect to spread, consisting of those portions of the rent, insurance, light and water used in the office, clerks' salaries, postage, stationery and printing, etc.

All of these expenses have to do with the mailing of your bills and collecting the money due you. Therefore, they cannot be spread on the labor basis. We analyze this and it strikes us that this work depends upon the number of subscribers, so we use the subscriber basis in spreading this, first making an allowance for tolls.

On going over our billing and collecting work we find that practically 50 per cent of the time is devoted to billing and collecting for tolls. Say our total expense to be spread on this basis is $150. Take 50 per cent of this and charge it directly to tolls. This leaves us $75 to spread over Jonesboro and Smithboro city and country. We'll say we have the following number of stations in each division:

		Per cent.
Jonesboro city	500	41.7
Jonesboro country	200	16.7
Smithboro city	400	33.3
Smithboro country	100	8.3

Applying these percentage figures to our $75, we get the following:

Jonesboro city	$ 31.28
Jonesboro country	12.52
Smithboro city	24.98
Smithboro country	6.22
	$ 75.00
Charged direct to tolls	75.00
Amount spread on station basis.	$150.00

We have now spread all of our general items. In addition to these, each exchange will have some few local expenses which are chargeable directly to that exchange. For example, take the expense of lighting and heating the operating room at Jonesboro, which amounts to $10 a month while Smithboro's will amount to $8 a month. As this was all used in the operating room, the fairest way to spread it will be on your operators' hours basis, which gives:

	Operators' hours.	
Jonesboro city	40	$ 5.00
Jonesboro country	20	2.50
Smithboro city	30	4.00
Smithboro country	15	2.00
Tolls	35	4.50
		$18.00

Our depreciation expense we obtain from our plant ledger as it is figured monthly, running as follows:

Depreciation of Jonesboro city equipment	$200
Depreciation of Jonesboro country equipment	80
Depreciation of Smithboro city equipment	160
Depreciation of Smithboro country equipment	40
Depreciation of toll lines	40
Total	$520

Upon estimating our exchange and toll revenues we can make up our cost statements, as presented in the following table:

Monthly Cost Statement.
May, 1918.

Jonesboro Exchange.		
Exchange revenue.	$875.00	$200.00
	City.	Country.
Repairs, equipment.	$ 15.00	$ 35.00
Repairs, wire plant	8.00	20.00
Station removals..	2.00	.....
Repairs, cable	3.00	.....
Operating	220.00	124.00
Indirect labor spread	77.35	55.65
General expense ..	31.28	12.52
Direct expense ...	5.00	2.50
	$361.63	$249.67
Gain before deducting depreciation.	$513.37 loss	$ 49.67
Depreciation	200.00	80.00
Net gain	$313.37 loss	$129.67
5 per cent on investment ($40,000)..	$200.00	$16,000 $ 80.00
To surplus, credit.	$113.37 debit	$209.67

Monthly Cost Statement.
May, 1918.

Smithboro Exchange.		
Exchange revenue.	$687.50	$100.00
	City.	Country.
Repairs, equipment.	$ 36.00	$ 12.00
Repairs wire plant.	.....	23.00
Repairs, cable	12.00	.....
Operating	175.00	85.00
Other maintenance	8.00	.....
Indirect labor spread	72.10	37.45
General expense ..	24.98	6.22
Direct expense ...	4.00	2.00
	$332.08	$165.67
Gain before deducting depreciation..	355.42 loss	$ 65.67
Depreciation	160.00	40.00
Net gain	$195.42 loss	$105.67
5 per cent on investment ($32,000)..	$160.00	$8,000 $ 40.00
To surplus, credit.	$ 35.42 debit	$145.67

Monthly Cost Statement.
May, 1910, Tolls.

Toll revenue	$600.00
Repairs, toll lines	45.00
Operating	210.00
Indirect labor spread	79.80
General expense	75.00
Direct expense	4.50
To long distance company	300.00
	$714.30
Loss, before figuring depreciation.	$114.30
Depreciation	40.00
Net loss	$154.30
5 per cent interest on investment ($6,000)	30.00
To surplus debit	$184.30

None of these are actual figures, of course. Nevertheless the condition they bring out, namely, a gain in the city and big losses in the country and on tolls, will show up in the majority of telephone companies.

Another feature worth mentioning is in the indirect labor spread. You will note that we charged $27.65 to plant, made up of the following:

Jonesboro city, exchange lines	$ 6.30
Jonesboro city, station equipment..	9.45
Jonesboro country, station equipment	3.85
Smithboro city, station equipment..	8.05
	$27.65

Do you charge this to plant or expense? A great many companies that do not realize the very great value and importance of accounting, do not make a spread of this kind. The result is that month after month money which actually went into plant is dissipated through their expense accounts. This will amount to $3,000 or $4,000 in ten years. It must be remembered that in a rate case you use your entire plant, whereas you only use one year's expense. Therefore, your expense would only carry one year's money while your plant would lose ten.

It is this difference that is not grasped. I have talked to a number of telephone men about this very thing, and they always come back with the statement that

it does not make any difference whether they spread it over the plant or not, for if it goes into expense it will increase their expenses that much and make their rates that much higher.

They fail to take into consideration that plant figures are cumulative—expense figures as used in a rate case are not.

Most managers will admit that country service is a losing proposition at the present standard rates, but I do not think they fully realize just what a big loss it is. When it comes to tolls, the majority of them claim that the toll business is the life-saver, whereas it has been proved in many cases, that the toll business instead of being a life-saver, really ranks right along with our country business in being part of the millstone around our necks.

Various commissions have recognized that country business is a loser, but they take the stand that the city subscriber should carry the burden. From studies I have made, it requires 60 per cent city subscribers to support 40 per cent in the country. How can the city pay the country's way, if your subscribers stack up 80 per cent country and 20 per cent city? This is one important feature that must be threshed out in the near future.

The country subscriber must be made to pay his own way or, at least, pay enough to cover the actual cost of giving service, and $12 grounded and $18 metallic rates will not do it.

You say: "all well and true, but how are you going to do these big things?" The answer is cost accounting. Not the mere keeping of books to show whether we make or lose money, but keeping them so we can tell where we make and where we lose.

Can this be done by the average small company? It certainly can provided they have the proper cost accounting system. Where can they get this system? To that question I would answer:

The United States Independent Telephone Association has a number of able accountants connected with member companies who are acquainted with all the in's and out's of the telephone business. By gathering them together and having each one contribute something to the general scheme, we would be able to develop a cost accounting system that would meet every need of the business—a system shorn of red tape, yet giving us all the essentials. This would have many advantages.

First, the member companies should be able to buy their records and forms at cost, from the association which would buy then in quantity, thus greatly reducing the cost. Second, any system to be of value, must be used by a number of companies, for in cost accounting the distribution of the indirect, or overhead expense is the important point.

This distribution can be made according to any number of recognized methods, yet if you use one method to distribute your overhead and I use another, we have absolutely no grounds for comparison, because the overhead is the deciding factor. Therefore, the whole plan depends upon the majority of companies using the same methods in order that we may compare figures, and the association should be able to make this clear to its members.

Now get this picture in your mind: If all the members of the United States Independent Telephone Association used this standard cost accounting system, they would make up monthly cost statements. Let them make these in duplicate, sending one copy to the association, where they could be sorted out into different groups, each group representing different size companies. Then an average cost statement could be made up covering each group, and mailed to the members in that particular group.

Can you think of anything that would be more helpful to you than a statement showing what 500 companies of the same size as yours are doing, and this statement in the same form as yours, in order that you might readily compare your statement with the average and see just where you lagged behind? Can you think of anything that would help you build up a bigger and better business, and stop the leaks better than this?

This is not a wild idea, an untried scheme, because it is being done in other lines of business. The printers have a very elaborate cost system worked out, and all the members of their association receive an average sheet such as outlined. So it is not a matter of being practical, but just a matter of whether or not we are contented to stand still, doing nothing to remedy our troubles.

If we could only get the viewpoint that the telephone business was a manufacturing plant, producing three classes of products, namely city service, country service and toll service, we would be in a much better position to appreciate the value of cost accounting. You, as a manufacturer, would have to know just what each of these products were costing you if you were to stay in business, for your selling price would be your cost plus a reasonable margin of profit.

We will say that your three products are such that, while it is necessary to manufacture all three of them in order to turn out a finished line, only one of them could be sold at a fair margin of profit.

You would have to know to a certainty just which one of the three carried the profit in order to have your sales force push the profitable article. If you did not know this, your business, instead of being in your hands, would be in the hands of chance, because chance alone would decide whether your profitable article was sold or the non-profitable article. On the other hand, if you knew which one carried the profit, you would naturally instruct your salesman to push that article and, as more selling effort would be devoted to it, naturally more sales would result.

This condition exists in practically every business. Some articles carry a larger percentage of profits than others. The good business man pushes the line that carries the big profits, but first his cost records have to tell him what line that is—he cannot make a wild guess.

We have it on the manufacturer. He, of necessity, has to sell some articles in his line at cost, or less, in order to meet competition. We do not have to do this, since in the majority of states we are protected from competition.

I have always noticed how keen salesmen are to sell batteries, so one day when talking to a salesman who knew his business, I asked him why it is that a battery contract is such a prize. He answered that the overhead on a barrel of batteries was practically nothing, because it is not necessary to pack, sort and box 125 cells separately—all that is done is to roll out a barrel.

The city is our barrel of batteries, while the country can represent 125 different articles that have to be sorted and packed separately. That costs money, so why not make the farmer pay for his hand-picked variety?

Nevada (Iowa) Company Acquires Control at Story City.

The Story County Telephone Co., of Nevada, Iowa, has purchased a slight majority of the stock of the Story City Telephone Co., of Story City, Iowa, placing it in virtual control of the latter company.

The Story City plant was built by F. M. Boardman, manager of the Story County company, in 1901. It was operated by him for a year and a half before he sold it to the local people. It now serves some 440 subscribers. According to Mr. Boardman, there will be no immediate changes in the operation of the Story City plant.

Commission to Make Appraisal of Ohio State Properties.

The Ohio Public Utilities Commission has started work on a complete appraisal of the holdings of the Ohio State Telephone Co. in the state. The work is being done under the supervision of Thomas Green, telephone expert of the commission.

Iowa Plant Has New Owner.

The Marcus Telephone Co., of Marcus, Iowa, has been purchased by Henry J. Reimers, who formerly owned the electric light plant at Marcus.

Transmission of Cord Circuits

Various Types of Magneto Cord Circuits — Comparison of Their Relative Transmission Efficiencies and Operating Features—Paper Presented at Annual Convention of Canadian Independent Telephone Association

By Walter C. Freeman

During the past few years we have heard a great deal and read a great deal on the subject of "Transmission Efficiency" and the ways and means to improve the electrical properties of circuits so that the telephone-using public may talk and hear telephonically over greater distances with the same ease that they conversed before the era of ultra-long distance toll lines.

This question of transmission efficiency is one that affects every telephone company, large and small, because it has a direct influence upon the earnings of the operating company and upon its greatest asset—the good will and satisfaction of its subscribers.

If, for example, one of your subscribers originates a toll call for Toronto, London, or Buffalo and for some reason or other cannot hear distinctly and has difficulty in getting the message through to the distant station, the subscriber's confidence in your ability to deliver long-distance telephone satisfaction is diminished and such calls are made thereafter by that subscriber only when there is no alternative means of quick communication. On the other hand, if the long distance conversation is carried on with the ease and clearness of local conversations, the long distance habit will grow and, as a consequence, the income from the resulting traffic will be proportionately higher.

In these days of swift progress, the public demands improved telephone service, just as it demands speedy transportation from town to town and city to city. In this way we may draw a simile between the telephone company and the railroad company.

In the case of the railroads, increased speed and the use of heavier rolling stock made necessary the re-ballasting of the roadbed, the elimination of steep grades, the straightening of tangents, and strengthening or rebuilding of bridges. In a

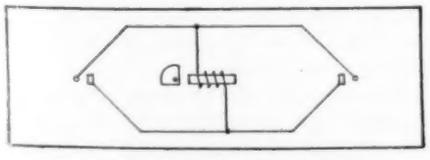


Fig. 1. Single Bridged-Drop Circuit.

like manner, the telephone company must provide increased transmission efficiency for both local and long distance service by raising the standards of its line construction and maintenance, by the use of telephone instruments of tested and known high quality, and the elimination or abatement of transmission losses in its central office equipments.

The connecting cord circuits in local battery switchboards are common sources of transmission losses. The losses in the circuits are seldom taken into consideration by the smaller companies because of their confidence in the quality of the equipment furnished by the manufacturer. On the other hand, if losses in the switchboard are suspected, they have no means of verifying their suspicions because of the lack of adequate testing equipment with which they might determine the extent of the loss and localize the inefficient apparatus.

In this paper some of the types of cord circuits in common use will be discussed and their relative transmission efficiencies and operating features compared. To begin with, let us review the characteristics which every local battery switchboard cord circuit ought to have. In my opinion the ideal cord circuit should

1. Possess highest possible transmission efficiency.

2. It should be non-ring-through. In other words, the act of ringing-off by either one of two subscribers connected by means of the cord circuit, should not ring the bells on the connected line.

3. It should ring-off positively. The clearing-out drop or drops should operate every time, under any operating condition, when the subscriber signals for a disconnection.

4. It should be equipped with two separate clearing-out drops arranged so as to give double supervision over local connections.

Reverting for a moment to the subject of transmission efficiency in general, we should bear in mind that the addition of any series or bridged apparatus connected in the circuit introduces a transmission loss. In the case of apparatus connected in series, the losses are large when the impedance is high and small when the impedance is low. In the case of bridged apparatus, the condition is reversed; that is, when the bridged impedance is high, the loss is small and when the impedance is low, the loss is large.

There are other transmission factors which are to be considered when making transmission studies of circuits but the two factors just mentioned are sufficient for our comparison of some typical cord circuits and give us a clearer understanding of the kinds to use and the kinds to be avoided.

The circuit of Fig. 1 shows the general arrangement of what most telephone

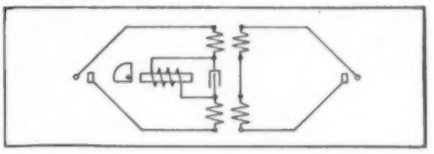


Fig. 2. Circuit of Some Rural Companies.

men term a "single bridged-drop cord circuit." It has, in the past, been used more than any other type because of its high transmission efficiency, low cost, and extreme simplicity.

Tests made in the Stromberg-Carlson electrical laboratory under standard testing conditions show that this circuit has a transmission loss of approximately 0.25 of a mile of standard cable when a 500-ohm clearing-out drop is used and 0.15 of a mile of standard cable when a 1,000-ohm clearing-out drop is used. The greater loss in the case of the 500-ohm drop is due to the fact that its impedance is considerably less than that of the 1,000-ohm drop. This exemplifies the reduction of transmission efficiency in a circuit because of bridged apparatus.

This circuit has several serious operating disadvantages. In the first place, it cannot be relied upon to give the operator a positive clearing-out signal under all operating conditions, particularly when a long rural line is connected to a short town line and the drop is shunted by the low resistance of the town line. In an attempt to lessen this trouble, some companies use clearing-out drops which have a very low resistance but this practice is not recommended, for any resulting gain in the operation of the drop involves a sacrifice in the transmission efficiency of the cord circuit by reason of the lowered impedance bridged across the circuit.

The second objection is that when one of two parties, on lines temporarily connected by a circuit of this type, rings off after completing a conversation, the signal is apt to pass through the cord circuit, besides operating the drop, and causing false signals on the connected line.

The third objection is that since it has a single clearing-out drop, the operator cannot tell whether one or both of the connected subscribers have signaled for the disconnection. To make sure that the

conversation has been finished, it is necessary for the operator to listen on the line and say "Operator" before taking down the connection. This, it will be agreed, is inefficient from an operating standpoint and especially troublesome during periods when the traffic is heavy.

In Fig. 2 we have a circuit which has been used to some extent by rural telephone companies, especially those operating systems composed of a mixture of grounded lines and metallic lines. This is a development of the circuit of Fig. 1 and contains as additional equipment, a repeating coil and condenser.

Some forms of this circuit are arranged with the repeating coil wired in the circuit permanently, while in others a key is provided whereby the operator may cut-out the repeating coil when it is not needed as, for example, when a connection is made between two quiet metallic circuits.

This circuit is furnished with a talk-through type repeating coil; that is, a repeating coil in which the windings and the iron in the magnetic circuit are designed to give the repeating coil greatest efficiency at voice current frequencies. The transmission loss in this type of circuit will range from 0.8 of a mile of standard cable, with a well-designed repeating coil

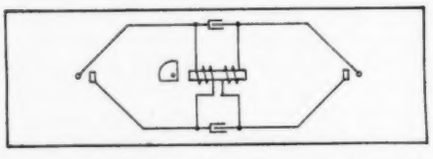


Fig. 3. Circuit With Single Clearing-Out Drop With Separate Windings.

and drop, to five or six miles of cable with inefficient types of this apparatus.

Some manufacturers have a practice of supplying this circuit without the condenser connected between the windings of the repeating coil on the clearing-out drop side of the cord circuit. Under this condition the circuit is inefficient in ringing-off.

A recent laboratory test throws some light on the relative ring-off values of the two circuits. We first wired the circuit with a 2 m.f. condenser connected as shown in Fig. 2 and connected an 80-ohm telephone ringer across the line to the clearing-out drop side of the cord circuit. Under this condition we were able to ring-off from the opposite end through a resistance of 18,000 ohms; however, upon removing the condenser, we were only able to ring-off through 2,500 ohms.

This shows how important it is to insist upon having condensers wired in repeating coil cord circuits, as shown in Fig. 2 to obtain good "ring-off" qualities in circuits of this type.

This circuit is objectionable from an operating standpoint in that it is not provided with the two separate clearing-out drops necessary for double supervision. It is not absolutely non-ring-through, but is more free from ring-through troubles than the simple bridged drop circuit because the repeating coil will not transform the low-frequency ringing currents efficiently.

In the circuit of Fig. 3, which, fortunately, is seldom used, it will be noted that there is a single clearing-out drop which is provided with two separate wind-

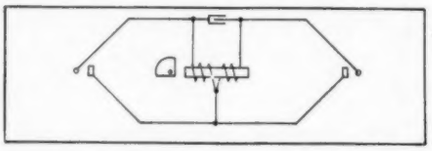


Fig. 4. Circuit for Improved Ring-Off.

ings. The terminals of these windings lead to opposite halves of the cord circuit which are separated by condensers. The capacity of condensers used in this circuit is generally ½ microfarad in each side in order to divert the ring-off signaling current through the windings of the clearing-out drop.

This circuit evidently was put on the market by some manufacturer who wanted an inexpensive, sure ring-off circuit and didn't care much about its other qualities. Its transmission efficiency is poor—the loss ranges from five to eight miles of standard cable, depending upon the impedance of the windings, which must necessarily be kept quite low if the ring-off feature is to operate positively.

It is not a non-ring-through cord circuit because the common core and arrangement of the windings in the clearing-out drop coil make the drop act as a transformer or ring-through type repeating coil. Needless to say, the use of such a circuit as this is not to be recommended if high transmission efficiency is desired.

The circuit shown in Fig. 4 is another single clearing-out drop type arranged to give improved ring-off service. It is somewhat similar to Fig. 3 in that a double-wound clearing-out drop is employed, but only one condenser is used.

As in Fig. 3, the object of the condenser is to oppose the flow of ring-off signaling current and to force it to traverse one or the other of the two windings of the coil and thereby operate the drop.

This circuit gives excellent ring-off service but is objectionable in that its transmission efficiency is very low—the

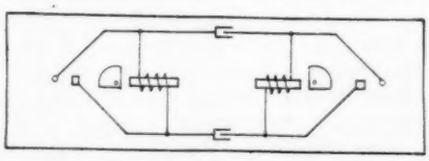


Fig. 5. Double Supervision Circuit.

loss ranges from four to six miles of standard cable, depending upon the impedance of the drop. It is not proof against "ringing-through" because it possesses the disadvantage common to all double-wound drops in cord circuits—transformer action from one winding to the other.

Another point which should not be overlooked is the lack of symmetry or balance in the electrical properties of the circuit, due to the presence of a condenser in one side and not in the other. The unbalanced circuit condition is not particularly serious for local connections but is liable to be troublesome in exchanges where considerable long distance business is handled, especially when the long distance lines are subject to induction from high tension power lines, as the induced current will naturally flow from one side of the circuit to the other and produce noise in the receivers while parties are using the line.

The circuit of Fig. 5 provides for double supervision of connections by means of two separate clearing-out drops—one drop being connected to each of the two halves of the circuit formed by the condensers in each side of the circuit.

This circuit has the advantage that the clearing-out drop operates positively without the possibility of transformer action between the windings and consequent "ring-through" trouble. Its non-ring-through properties are also due to the use of the low capacity condensers in either

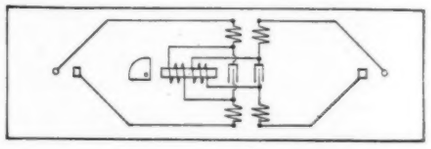


Fig. 6. Positive Ring-Off Repeating Coil Type of Circuit.

side of the circuit which, being connected in series with each other, present an apparent high resistance to low frequency ringing currents. The arrangement of the circuit is symmetrical and the electrical properties are evenly balanced.

The advantages of this circuit, however, are outweighed by the relatively great transmission losses which are caused by the extra drop and the two series condensers. The loss in this circuit in miles of standard cable will range from five to ten miles, depending upon the type of equipment used. To put the facts in a nutshell, the operating advantages are gained only through considerable sacrifice of transmission efficiency.

Fig. 6 shows the elements of a positive ring-off repeating coil type circuit which, to the best of my knowledge, has not been used very extensively.

It consists, as will be noted, of a talk-through type repeating coil, two condensers, each having a capacity of 2 m.f. and a single clearing-out drop equipped with two separate windings, so that the drop may be operated by ring-off current from either end of the cird circuit.

The transmission losses in this circuit will range from two to six miles of standard cable, depending upon the individual

efficiencies of the repeating coil and the clearing-out drop.

The circuit gives positive ring-offs, due to the use of the talk-through type of repeating coil, but cannot be considered non-ring-through because of the double-wound clearing-out drop which is liable to permit transformer action from one winding to the other and the transfer of signals when a short line is connected to a long line.

It is evident from this review of the different types of circuits that there is not one that satisfies all of our requirements. Unfortunately the circuit which has the highest transmission efficiency does not possess the necessary operating features and conversely the circuits which have the proper operating features have low transmission efficiencies.

The circuit, which, in my opinion, completely satisfies our ideals of what a circuit should be, is the double clearing-out-drop repeating-coil cord circuit, Fig. 7.

It may seem like a rank heresy to some telephone men to propose a repeating coil cord circuit for all cord circuits in a switchboard but we must remember that the repeating coil of today is a vastly more efficient piece of apparatus than the repeating coil of yesterday.

In the past a repeating coil was a thing to be used only when absolutely necessary. Talk-through types of repeating coils are now obtainable in which the loss under average circuit conditions does not exceed 0.5 mile of standard cable under any operation condition, and often this loss is reduced to 0.35 mile of standard cable. This is a remarkable improvement over old types of coils in which a loss of five or six miles was to be expected when they were cut in the circuit.

When one of the new repeating coils and properly designed 500-ohm clearing-out drops are used, this circuit shows a transmission loss of only 1.15 miles of standard cable. When 1,000-ohm clearing-out drops are used, this loss is reduced to about 1.09 miles of standard cable. This loss is so small when the cord circuit is used for either local or long distance connections that it is practically impossible for anyone but a trained transmission expert to detect the difference between this circuit and the single bridged-drop type of

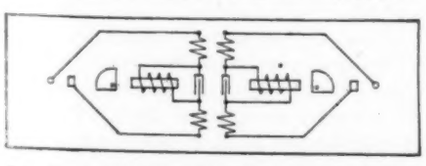


Fig. 7. **Double Clearing-Out Drop Repeating-Coil Type Circuit.**

circuit which had the best talking qualities of any of the circuits discussed.

This circuit is non-ring-through because it is equipped with a special design of talk-through type of repeating coil.

It rings off positively, due to the efficient design of the repeating coil and the presence of the 2 m.f. condensers connected between the inside terminals of the repeating coil windings.

It provides double supervision since it has two separate clearing-out drops.

It will be observed that it satisfies every

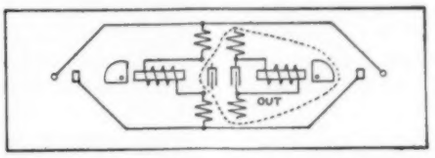


Fig. 8. **The So-called "Zero Loss" Circuit.**

condition of the ideal cord circuit. The only objection that can possibly be raised against the circuit is its increased cost, due to the addition of the repeating coil, condensers and the second clearing-out drop. This increased cost should not be considered as an expense, but as an investment, for the added equipment will give better service under all operating conditions. It is an investment that parallels the additional investment that railroad companies were obliged to make in order to provide adequate service by means of better rolling stock and better roadbeds.

In connection with the application of this circuit to long distance traffic, a certain number of cord circuits are each equipped with a repeating coil key, usually the first two pairs of cords on the left side of the operator's position. The repeating coil key in each circuit is wired so that the coil is normally in.

When the key is normal, the talking circuit and clearing-out drops are arranged exactly like the other cords in the switchboard. When the key is operated, however, the repeating coil is not cut out of the circuit in the customary way. Operation of the key gives so-called "zero loss" condition for long distance service by cutting out only one side of the repeating coil with its associated clearing-out drop and connecting the other in series with the winding of the other clearing-out drop. This gives the condition shown in Fig. 8.

Here we have a splendid circuit condition in which the impedance remaining bridged across the cord is that of the clearing-out drop plus that of one-half of the repeating coil. Under standard testing conditions, this gives a loss in the cord circuit of only 0.08 mile of standard cable or, in other words, it is twice as good as the simple bridged clearing-out drop circuit. The loss closely approximates that of a switchboard cord with a plug at each end so that it is well-termed a "zero loss" circuit.

The combination of these two cord circuits in a switchboard is very good from an operating standpoint because the operator may use all cords in the board for local connections, if needed, during busy hours. I firmly believe that this is the proper type of circuit to use and venture to predict that, regardless of its increased cost, it will be the circuit used most generally by telephone companies that consider transmission efficiency when making improvements in their office equipments.

Electric Railway Publicity Which Reaches the Public.

"Why is it?" is the catch-line used by the Tacoma Railway & Power Co. in big black type in a half-page advertisment. The printed matter has seven inches of white space on each side so that attention is centered entirely on the message.

And this is the message conveyed to the Tacoma public—its reasoning applies just as well to telephone companies:

WHY IS IT

"When the cost of practically everything we use has gone up many times, and the higher cost is paid usually without protest;

THAT

When a street railway company—for possibly the first time in 20 years—suggests a slight increase in fare and relief to enable it to meet the increased costs of labor and material, there is an immediate protest?

Ask yourself, Is it reasonable?"

"Central" Speaks.

Call me not in scornful numbers;
Like "two-seven-O-ring-three;"
Snapped out in disdainful accents,
Pray, be courteous to me.
Would you like to sit here with a
Telephone strapped on your head,
All day long to answer summons?
Wouldn't you wish that you were dead?

When I say the line is busy,
Honestly, sometimes it is,
Why do you get so indignant,
When you hear the buzzer whiz?
And wrong numbers naturally
Sometimes, I am at a loss;
But in fact I give them mostly
To subscribers who are cross.

Be polite, it will not hurt you,
Even though I'm in a box,
I am human, although hidden,
And am sensitive to knocks.
Be polite; do unto others
As you'd have them do to you.
It's a good rule to observe and
You'll get better service, too.

To a Telephone Wire.

Oh, speaking wire, thou slender thread
  Spanning the pole tops overhead—
Tell me, what tales of joy or wrong
  Are flashing thy metal heart along?
Is it busy word of barter or trade?
  Is it song of gladness, or cry for aid—
Is it message of love thou sendest afar,
  Is it a whisper of peace, or call to war?

Thro thy taut strained miles of shining
    strand
  Thy lightning pulse, across the land—
Carries the word of a world today.
  The word of the helpless, of sorrow or
    fear,
  Or accents of love from home folks
    dear—
  All, all are thy voices, thy message of
    fire,
Thou senseless yet eloquent, wonderful
    wire.

Now What Do You Think?

The Government Way—It Is Your Way, Too

By J. C. Kelsey

I told you so! You know how you feel toward the fellow who comes around to collect the election bet. Yet you can't begrudge a human being the right to indulge in a little triumph over guessing right once in a while.

That is what the railroad man is doing today, and he chuckles in a most aggravating way: "Under private control, we asked for 15 per cent while under public control we get 25 per cent and more."

I told you so!

For years the telephone man has listened to some angry customers, some rich farmer or some parlor Socialist doctor, saying that the government should own the telephones. What did the government do when it took over railroads and what would it do for the telephone business if it did likewise?

The first thing it would do would be to pay decent wages to its employes, and among the first would be your own employes and yourself. And further, men and women would receive equal pay for equal work, and a black man would get as much as a white man.

What was the second thing the government railroad officials did?

Free service was absolutely abolished!

No longer will you get off your through train to step onto a local train which winds its difficult way through valleys and around mountains, and get a free ride—you will pay three, maybe five, cents a mile instead.

Free side trips and even stopovers have been passed into the great beyond, never again to live. Cheap excursions, mileage tickets, and every form of cheap discrimination has gone forever.

Instead of encouraging groups of people to travel, they are told to stay at home and quit littering up the railroad.

Now what next?

The railroad fare is placed at three cents a mile. It has been a long time since any man paid such a price to ride a mile over a smooth roadbed, in a comfortable coach, with a dining car close, and even a whisky bottle.

For years, legislatures met with nothing to do. They had to appear busy or something, so nothing seemed so simple and easy as to pick on a railroad. Without analysis of cost, railroad fares were cut and cut until it cost about as much to eat as to ride all day.

All the time, the roadbeds got older, the tracks smoother, the trains faster, service better, and Safety First became a reality. Receivers instead of presidents ran most of our great roads and others escaped because usually things can never happen at once.

What next? Under government control, passengers will now pay three cents a mile.

But what does the man who disdains the ordinary passenger coach and creeps, hog like, into an exclusive parlor car? The government is after this aristocrat and justly adds a half-cent for every mile he avoids the mob and travels by himself.

And likewise the man who prefers to sleep comfortably all night, instead of riding forward and be awakened every hour by a new conductor, pays an extra half-cent for every mile he lies in bed or sits up in his broad seat.

If he finds this service too common, and seeks shelter in a compartment, he has to buy two railroad tickets at 3½ cents a mile. But if he finds the compartment lacking, and seeks the still more aristocratic seclusion of the drawing room, he buys five tickets at 3½ cents a mile.

Apply this to the telephone. After the material increase in wages, free service would be abolished.

The normal rate of toll line conversation is based upon a half-cent for a three-minute mile, with a rational minimum of ten cents. It would not be long until the rate for a toll conversation would be a cent per three-minute mile. No message would be received at less than 15 cents, because every telephone man already knows that no toll message can be originated for less than five cents, nor can it be terminated for that amount.

If originating charges are not less than five cents, and terminating charges are not less than five cents, will some one step forward and explain how a toll line can earn anything on a ten-cent message or even a small return on a 15-cent message?

The government would soon establish a toll rate which would cut down the number of talkers all right.

Carrying out the government plan, the man who took a four-party-line telephone service would pay $2 a month or more, instead of the pitiful dollar or dollar and a quarter, and he would be asked to do as little calling as he could.

The man who took a two-party-line would be like the man who took the parlor car or the Pullman, and he would pay $3 for his telephone and maybe more. But the subscriber with an individual line, like the fellow in the drawing room, who has to pay for several tickets, would have to pay the price of two or three four-party telephones anyway.

There would be nothing less than $4 or $5 for an individual line telephone, in America, if the government carried out the same logical plan with telephones as it has with railways.

But the government went farther. We have heard much of German efficiency and one man even said in our hearing that America would be much improved in a business way if the kaiser took us.

But before this war ends, there won't be a man who will not take his hat off to the efficiency of the American government—it will make alleged German efficiency look sick. In fact it already is doing just that very thing.

Every detail of the railway situation is a just one, as well as an advance in efficiency. The wages paid to railroad men have ever been small, and no greater mystery exists than the reason why railroads could get help at all.

The situation in telephone circles has been equally bad. Every telephone man has the right to expect wages commensurate with the neighborhood in which he lives.

But the government in a truly marvelous sweep, not only laid out a passenger rate program but tackled the freight rate. And on top of this, this efficient government notified the public utility commissions of the various states that they had better keep hands off.

However, the government will welcome suggestions from commissions—after the rates go into effect—so that irregularities may be ironed out. Please note that the rates go into effect first, while suggestions, arguments and orders follow.

What a contrast to some state laws which keep a public utility property dangling over the brink of bankruptcy while the commissioners sound the public pulse or run for the U. S. Senate.

Here is something for the man who argues for free service. And it is something for a state commission to understand, especially those who still insist upon practical state-wide free telephone service.

To those who argue that five-mile hauls are nothing at all, and should be

free, this new scale of freight rates will be comforting:

Old scale:

(100 pounds, five-mile haul or less.)

1 mile.	2 miles.	3 miles.	4 miles.	5 miles
$0.12	$0.10	$0.08	$0.06	$0.048

New scale:

$0.25	$0.21	$0.17½	$0.15	$0.11

Think of it! A rate not only doubled but practically tripled, simply because American efficiency recognizes that loading and unloading, like originating and terminal toll calls, are most vital factors.

Now get this point: TELEPHONY has ever tried to tell telephone men that a rate raise is for public interest. Director General McAdoo, in announcing this increase in rates, says that it is done in the public's interest.

It is to the public interest that men receive decent pay for decent work. There is nothing gained by the public in paying a telephone manager $50 a month —he would be a much better and more useful and ever-courageous citizen if he received $150 instead.

He would be well worth to the public that additional $100 per month because of his increased strength and faith in the justice of an American system which says that all men should be treated alike.

Why should telephone employes, like railway employes, be compelled to live in cheap cottages in the worst part of the town? The state and government will actually save much by reason of the children having more comforts, better and more decent surroundings.

No public interest can possibly be served by underpaying any man. Let us hope that the Indiana commission which took such a contemptible attitude on the salary question in the Greencastle case, will try to understand McAdoo's position.

If they can't get it now, after all the attempts of the government to make it clear, it certainly looks as if Indianapolis needs some additional investigators of loyalty.

The very next suggestion of a salary or wage cut by any public utility commission should lead to the organization of a vigilance committee and the use of a rope or a notice to leave the state. A public official, who can't see the best interests of the public, should be impeached, if not hung.

Not only is raising the rates to meet increased wages a patriotic duty, but it is called a public interest to raise rates to meet the increased coal bill of $160,000,000. And further, it is a public interest to permit higher rates to meet the increased cost of material, such as every person and institution, as well as government, has encountered.

Not only have wages been increased $300,000,000 but the operating cost, after every economy has been made, has increased $860,000,000. This increased operating cost reveals also a patriotic duty to meet it.

What a rebuke to the contemptible theory practiced by some commissions that our utilities should "live on their fat."

Only recently a man before a Chicago city council committee actually quoted that despicable theory that a great public service utility should have less in war than in peace, and that the present rates in Chicago should not be increased until after the war.

When we realize how tremendously necessary the telephone has been to the mere organization of our army, and still is, we can see at once what a dangerous pro-German theory that idea of "living on fat" becomes.

The cause of government ownership never received such a boost in America as it did last week. What telephone employe, wrestling with the vast needs of the hour, for even meat, milk and bread, discouraged over the attitude of state-controlling bodies toward decent living wages, will not, in his heart, welcome government help such as the railroad employes have been given?

And what public utility commissioner can look ahead one year and be sure of his job if many more utilities are taken over, and the notice given that, while suggestions may be welcomed, certain rates go into effect and are there to stay?

If there is any blame to be attached, it must fall upon the people themselves. They made an outrageous law which put the very existence of our public servants in the hands of three or more men, each one usually incompetent, and timid as well, to face the situation.

To think that three politicians shall say what salary shall be paid, what charges shall be made, and what action shall be taken by the very best trained and skilled technical men in America, is really a commentary on our national wisdom.

To think that three men, without skill and without training, with political ambition usually, should have such power—it is enough to make the Signers of our Independence turn over in their graves.

No wonder they are told to send suggestions, but to "keep off the grass" of the new order.

This national emergency has convicted not only our state utility commissions of incompetence, narrowness and ignorance, but lays its heavy hand upon the Interstate Commerce Commission.

We have had too many abstract thinkers and not enough doers, thinking more of salary than anything else. Strange, indeed, is the eagerness with which our corporation baiters and haters grab their salary checks, without a thought of where the money comes from.

It is certainly a happy day for America that a practical man happened to be in the saddle when our great utility emergency struck. How lovely it would have been if every state utility board had failed to receive the sign "keep off the grass."

This certainly is no time for refined anarchy of the "live off your own fat" variety.

Most telephone men would enjoy such practical help in the telephone business. There would be no more free service and $2 and $1 rates would join the dodo bird. And your farmer friends would spend at least $36 a year for telephone service.

It is a good thing that some of our friendly commissioners cannot sue the government for mental anguish. It was sure some humiliating order.

MORAL: Chickens come home to roost.

The Indispensable Telephone.

The writer uses ink and pen.
He thinks they're all to him,
If only he could have these things
All battles he could win.
The merchant has his merchandise,
If all of it he'd sell,
How joyful then would be his lot
And all with him be well.

The housewife has her daily work,
And thinks it hard to bear,
And wishes she could have one thing
To lighten toil and care.
The carpenter will have his tools
And to his work he'll go.
He thinks his lot the saddest one,
On this old earth below.

But there's one blessing for us all.
So cheer up, do not moan,
And look upon the greatest thing,
The well known *telephone.*
A disappointed sigh escapes,
When you do hear of this,
But if you deem it not worth while,
Then, "Ignorance is bliss."

For does a *telephone* not aid
A merchant to sell his wares,
And the busy housewife with her work
Her heavy burdens help bear?
We've had this instrument so long
In office, store and home,
That we don't half appreciate
The useful *telephone.*

The carpenter forgets a tool
And to the 'phone he'll go,
He calls and has it sent to him
Instead of going home.
The writer does not linger long,
When he may need a pen,
But uses the 'phone and has it sent
And he soon's at work again.

I wonder how we'd do without
The useful *telephone,*
Oh, what confusion there would be
In office, store and home.
You say you do without a 'phone?
Why that is just a sin,
To think of all the joy you've lost,
You must have one put in.

—Gladys Snapp.

What Is Your Company Doing?

Chats About Company Doings.

By Stanley R. Edwards.

Not all accidents happen to the linemen—they are shared with others. The illustration from The Safety First Bulletin of the Texas Telephone Co. shows one of them.

Here are some accidents related in the Bell Telephone News:

"An office employe walked to a window and carried a window pole in a vertical position. The pole struck a globe on a chandelier, breaking it into several pieces. One of the pieces in falling struck his foot and caused a deep cut.

A man was unloading two 136-foot extension ladders from an auto truck. Instead of unloading one at a time, he attempted to take two at once, and strained a cord in the thumb of his right hand.

An operator ascending the stairs in an exchange building, slipped and fell because the heels of her shoes were icy. The fall resulted in a bruise on her left elbow.

A lineman was bending nails over in a board with a chopping axe. He had hold of the middle of the axe handle with his right hand and was holding the board with the left. As he brought the axe down, the end of the handle struck the ground, throwing the axe off its course. It struck the middle finger of his left hand at the first joint, resulting in a severe bruise.

An installer while sawing off a metal projection of a booth door lock scratched the third finger of his left hand, breaking the skin. Infection was the result.

A repairman was inserting a screw in a signal case door, when the screw driver slipped and cut the thumb of his left hand.

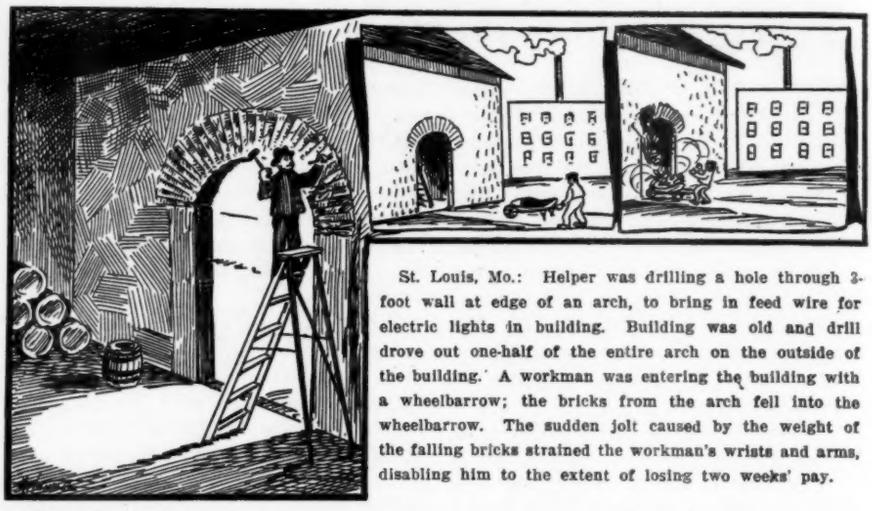
An operator was descending the stairs leading from the restroom to the operating room of an exchange. Her foot slipped, causing her to fall four steps, which resulted in a slight bruise on her left hip.

A building repairman strained his back while assisting in lifting a steam radiator into place preparatory to fastening it to the floor.

A shopman was cutting a stovepipe with a pair of bench tinner's shears which weighed about 25 pounds. The shears slipped off the bench at which he was working and fell on his right foot, injuring the toe."

There was a reason for each of these accidents. What was it?

"In looking over your illustration on page 28 of last week's issue of TELEPHONY," writes J. J. Veatch, district manager of the Central Home Telephone &



St. Louis, Mo.: Helper was drilling a hole through 3-foot wall at edge of an arch, to bring in feed wire for electric lights in building. Building was old and drill drove out one-half of the entire arch on the outside of the building. A workman was entering the building with a wheelbarrow; the bricks from the arch fell into the wheelbarrow. The sudden jolt caused by the weight of the falling bricks strained the workman's wrists and arms, disabling him to the extent of losing two weeks' pay.

"Safety First" Bulletin of the Texas Telephone Co. and Associated Companies Tells a Story Graphically and to the Point—Actual Occurrences Are Cited as Examples.

MODERN TELEPHONE COMPANY
INDEPENDENT
LOCAL AND LONG DISTANCE
TELEPHONE
INDEPENDENT CITY, ILLINOIS

Party-Line Subscribers Are Urged to Hold the Telephone Only Five Minutes

FIVE MINUTES is usually sufficient to complete an ordinary business or social transaction by telephone.

If the telephone company saves work when party lines are "tied up" for long periods while people are talking, the policy is unfair to its other patrons and the practice is discouraged.

It is not a kind act to compel your neighbor to wait more than FIVE MINUTES while you hold the line—a call for a doctor or an important business transaction may be delayed.

"Do unto others as you would have them do unto you" is a good rule.

Modern Telephone Company

The Independent Building

Service and Progress Streets

W.S.S.
WAR SAVINGS STAMPS
ISSUED BY THE
UNITED STATES
GOVERNMENT

The Modern Telephone Co. Runs an Advertisement Each Thursday in the Local Evening Paper at a Cost of $4.20. This is the Full Size of the Advertisement.

Telegraph Co., at Paris, Ky., "I note the lineman was pulling the pole with blocks and rope, and for the reason that the single-strand wire to the pole and blocks broke, the heavy block fell on the lineman's head.

"In this connection I also note that the lineman is pulling with a fall line from the wrong end of the blocks. I am of the opinion that if the blocks had been turned, end for end, as they should be in all such cases, even if the wire had broken, the block would not have fallen on the man at the fall line.

Besides the safety end of this proposition, the man loses just the amount of his weight when pulling against the ground instead of the pole or object he is trying to move."

Constructive comments, such as Mr. Veatch presents, are always welcome. It's through profiting from the experience and mistakes of others that progress is made. Let us have more comments and experiences.

The holding of long conversations by party line subscribers caused considerable trouble for the manager of the Modern Telephone Co. That is the reason he ran advertisements on the subject in consecutive weekly issues of the local newspapers.

The advertisement reproduced in last week's issue of TELEPHONY considered the subject from the standpoint of self-interest alone. In the advertisement of this week an appeal for shortening the length of conversations is made from another angle—that of the Golden Rule.

The Murphysboro Telephone Co., of Carbondale, Ill., recently placed in operation a postage-saving and circuit-conserving plan.

It is explained in a circular letter issued by General Superintendent W. L. Ford, to the company's employes as follows:

"Existing unusual conditions will not permit the continued use of our toll lines during the day, for the transmission of company business, except in cases of emergency. I would also call your attention to the increased expense of postage, which is no small item and should be curtailed as much as possible.

In view of these conditions, we are placing into effect a night message, for the transmission of company business, in order to effect a saving of postage and to permit the use of our toll lines for commercial business, during the day.

Please note on the blanks furnished, the different form numbers and colors. The blue form means that a reply is to be given the same night received. The yellow form indicates that a reply can be given the next night.

These messages shall be filled with the chief operator who will instruct the night operator to transmit between the hours of 10 p. m. and 7 a. m., to their destination, in the same manner that Form 100 reports are handled. In all cases, check back for correction. The chief operator will provide the night operator with these blanks, for the purpose of receiving these messages.

All concerned should become thoroughly familiar with this bulletin, as it is expected that an earnest co-operation will secure more efficient results at a considerable less expense.

These messages are to be kept on file with your other correspondence and should be used for all purposes, where a saving of postage and toll line, can be effected."

The forms contain in addition to the space for the message, lines to be filled in with "Time Received," "Time Sent," sending exchange and date and the name of party and exchange to whom the message is to be sent.

In sending the circular letter and forms to TELEPHONY, Mr. Ford says: "We find this plan is effecting quite a saving of postage and is making our toll lines more available for commercial business."

Engineers from the Rochester district of the New York Telephone Co. have been assisting with work in the Buffalo district. On account of the congestion of railroad traffic, the men and considerable equipment, including a section of a switchboard not required in Rochester, were transported to Buffalo by motor truck.

This indicates that telephone companies while caring for a tremendous amount of telephone traffic without undue congestion know how to avoid traffic congestion in other industries. And the motor truck is a most useful and valuable ally in other ways, as many telephone companies realize.

Power companies have adopted the message-on-monthly-bill plan of getting a story before their patrons. The North Coast Power Co., Hillsboro, Ore., submits to its patrons each month a public policy "story" in which a definite phase of the relation existing between the utility and the public is analyzed.

The introductory story on the January bill was entitled, "A Tri-cornered Proposition." It read:

"The public utility exists by reason of a need for the service for which it was created to render. This service is successfully and economically given only when the three prime factors entering therein—the investors, the operators and the public—each provides an adequate service at a fair return. No contract or agreement survives which does not provide a mutual aid and just transaction to all parties concerned.

The investors' need must provide sufficient funds to construct the skeleton around which the utility is to grow and to provide for its future extensions. Their return is a fair interest on the amount invested.

The operators provide the sinews by means of which the plant moves—becomes a growing concern. The employes, by reason of systematic methods, industry, loyalty and efficiency, produce reliable service at economic rates. Fair wages and humanitarian treatment attract and hold such employes.

The consumer provides the protoplasm by means of which the utility grows and prospers. A sick or impoverished horse plows a poor furrow. A constantly criticised employe fails to perform his duties properly. The public best serves itself by protecting the utility from unjust criticism and abuse and by eliminating unfair restrictions which tend to cramp the growth of the utility. Its fair return is reliable service at lowest possible rates which tend to upbuild the community, invite further investment of capital and maintain stable business conditions in general."

The second one of the series discussed "Prompt Payments" in this manner:

"All bills by the North Coast Power Co., due and payable the first of each month, are for services rendered the preceding month. Bills not paid by the 10th of the month become delinquent and the service subject to discontinuation without further notice.

It is necessary—in fact, required by state law—that public service utilities adopt definite rules and regulations pertaining to their service, and to observe a uniform system of rates and methods of collection.

The above rule is as necessary to the efficient and economic operation of the North Coast Power Co. properties as is the continuous and reliable service given. It is as necessary as the personal service and industry of its employes. The accurate accounting and keeping of the many individual records require its enforcement.

Time wasted in carrying delinquent accounts and lost in enforcing their collection, would otherwise be devoted to improve the service, to decrease the operating expense, and ultimately to reduce the cost of service to the consumers. Kindly keep these facts in mind and make remittance promptly."

The idea of placing stories on the monthly bills is excellent. Short, to the point, and well written, they should be productive of much good. Telephone companies could draw up an equally interesting series.

Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision Over Telephone Companies—Decisions of Courts in Matters of Interest to Public Utilities and Actions of City Councils Relative to Franchises, Rates and Service

Commission Has Power to Change Rates Fixed by Ordinance.

The public service commission has authority to authorize an increase in rates over what is specified in an ordinance of a municipal council granting a franchise to a public utility when the municipality admits the ordinance rates sought to be superseded are unjust, inadequate and discriminatory, according to a decision handed down in the complaint of Oil City, Pa., against a tariff of rates filed last fall by the Petroleum Telephone Co. The company succeeded in 1900 to the telephone business of an individual, who, by an ordinance of 1889, was granted a franchise for 50 years with a $24 rate for business and an $18 rate for residential telephones. The company sought to increase the rates.

The decision of the Pennsylvania Public Service Commission which was written by Chairman Ainey and handed down May 13, says it is manifest that a utility company should be given the right to charge rates which will insure it a return on its business and adds:

"The inadvisability of municipalities by fixing terms of ordinances fixing the rates of fare or the character of service to govern over a long period of years is most apparent in the present case."

The opinion also says that rates, even when made in franchise ordinances, must give way when found to be unjust or inadequate and that "such exercise of the police power of the state does not inviolate the authority of municipalities nor violate the sanctity of ordinance contracts." The opinion holds that upon the return of conditions to normal the rates permitted will require readjustment. The increase is allowed for a three-year period, and if conditions then require their retention, says the chairman, the respondent company may petition for their continuance.

The opinion is regarded as of considerable significance, as there have been numerous complaints filed against increases of rates by utility companies which municipalities have held violate ordinance contracts, especially relating to five-cent trolley fares.

Court May Decide to Forfeit Spokane Home Franchise.

Upon arguments submitted in the federal court at Spokane, Wash., Judge Frank A. Rudkin may decide that the franchise of the Home Telephone & Telegraph Co. shall be forfeited.

The issue on the trial at this time is between the city of Spokane and the Title Insurance & Trust Co., of Los Angeles. The latter is holder of a small part of the bond issue of the Home company and is opposing the forfeiture of the franchise on the grounds that its securities would be worthless should the franchise be annulled.

This is a different issue than that of the city against the telephone company now pending, but the effect of the decision in this case will be important and may be practically final.

The Los Angeles company, through Frank T. Post, its counsel, endeavored to show that the city, having recognized the Home franchise up to this date by having accepted its franchise tax and by having used a part of its system, was estopped from claiming the forfeiture.

The city is resting its argument in the hearing on the grounds that the consolidation of the Pacific States Telephone & Telegraph Co. and the Home Telephone & Telegraph Co. was a violation of the franchise provisions and that the franchise is thereby forfeited. The other contention of the city that the Home company had agreed to surrender its franchise is not used as an argument in this case.

"The city of Spokane not only recognized the validity of the Home franchise by accepting the franchise tax," said Attorney Post in his arguments, "but the city has refused to grant any franchise to the Pacific States company. There are a number of authorities in our courts which have taken the position that where a public utility is absorbed involuntarily, the franchise is not forfeited under the provision which prevented a merger with another compainy."

Alex. W. Winston, assistant corporation counsel, appearing for the city, supplemented his written brief with a lengthy oral argument in which he endeavored to show that the consolidation of the two companies was an absolute violation of the franchise provision under the law.

"I may call a horse a cow, but I could not operate a dairy with a whole herd of them," said Mr. Winston, during his arguments. "I don't care what Mr. Post calls this consolidation of the Pacific States and Home companies, but no matter what he calls it, it is only one thing in the eyes of the law, and that is a consolidation in violation of the franchise provisions.

"There are just as many cases in law that bear out our position as Mr. Post can cite and I will use some of those to which he has referred the court, to substantiate our own arguments."

The court took a decision in the matter under advisement.

City of Wheeling Accepts Company's Offer to Compromise.

The city council of Wheeling, W. Va., has accepted the compromise offered by the Chesapeake & Potomac Telephone Co. of West Virginia in the action of the city to expropriate the property of the former Consolidated Telephone Co. of West Virginia which some months ago was absorbed by the Chesapeake & Potomac.

Under the terms of the compromise resolution the city is to receive the sum of $28,500 in cash, 20 free telephones in addition to the 30 free telephones the company is now furnishing, and the use of the telephone poles of the company for use in carrying the city's police and fire signal and electric light wires. In the case of abandoned lines, the telephone company is obligated to transfer the city's wires at no expense to the city. In the event that the Chesapeake & Potomac Telephone Co. abandons any of the old National Telephone Co.'s poles, such poles become the property of the city, if the city desires to claim them. Otherwise such poles are to be removed by the Chesapeake & Potomac at its own expense.

The city on its part is to have the writ of injunction restraining the merging of the Consolidated Telephone Co. of West Virginia and the Bell Telephone Co. under the name of the Chesapeake & Potomac Telephone Co. withdrawn and to waive all claims, present and future, against the Chesapeake & Potomac and subsidiary companies.

When the Chesapeake & Potomac took over the Consolidated company, some months ago, City Manager Nagle and City Solicitor Cullinan delved down in the archives and dug up a mouldy copy of the telephone franchise in which they found a clause that if the Consolidated ceased doing business its property would revert to the city.

The Chesapeake & Potomac in the meantime had started work on changing the Consolidated system to its own, and the city sought an injunction to restrain the former from making further progress with this work. The case was carried to the state supreme court and when the status of the city's claim was defined

preparations were put in effect to carry it through. This procedure was in progress when the Chesapeake company, through its attorneys, offered the compromise which the city council has accepted.

Discrimination in Rates to Non-Stockholders Removed.

The Minnesota Railroad & Warehouse Commission on May 29 granted the application of the Elm Creek Telephone Co. for permission to increase its rate for multi-party rural service to $1.25 per month for stockholders and non-stockholders alike.

The company operates approximately 23 miles of rural lines, furnishing service to 50 subscribers over two circuits. These lines serve subscribers in the vicinity of Sherburn, Martin county, Minn., and connect with the local exchange of the Fairmont Telephone Co. at Sherburn for local service.

"The petitioner claims an approximate value of its property of $2,000. Of the 50 subscribers served, 24 are stockholders of the company, and up to the time of filing the application the petitioner has been making a rate to its stockholders of $8.10 per annum and to its non-stockholders a rate of $12 per annum.

The commission held that it is discriminatory and contrary to law for a telephone company to furnish service to its stockholders at a rate that is less than that charged to other subscribers of the company for the same service, and it must charge the same rate to each of its subscribers.

The petitioner admits that its lines are overloaded, resulting in poor service. The records show that one circuit now serves 22 stations, and the other, 28 stations. It is impossible, the commission states, for a rural telephone company to furnish good telephone service to its subscribers where the circuits are loaded to this extent, and in order to properly improve the service, the company should add at least two additional circuits which will enable it to distribute the load and reduce the traffic over each circuit.

The commission found that the rate requested is fair and reasonable and will not provide more revenue than is necessary to meet the operating expenses of the company, take care of depreciation and allow a fair return on the investment. The new rate becomes effective July 1.

To Test Rights of Power and Transmission Companies.

Nebraska courts are finally to have opportunity of determining what are the respective rights and liabilities of telephone and power transmission companies with reference to occupancy of highways. On several occasions the matter has come before the state railway commission, but each time there was a small telephone company on one side and a big power company on the other, or vice versa. Now a big telephone company has locked horns with a big power company, and the lawyers are getting ready for the struggle.

The Southern Nebraska Power Co., of Superior, recently applied to the state commission for permission to erect a pole line from Superior to Nelson. It desired to take the most direct route, which is a road on one side of which are strung the wires of the Lincoln Telephone & Telegraph Co. and on the other those of the Nuckolls County Telephone Co. These companies promptly objected to a 13,000-voltage line going down the same highway.

At the hearing the power company suggested that the two companies could, at their own expense, consolidate their systems on one pole line at one side of the road and leave the other side for its lines. It was admitted that under normal conditions, with a properly built and maintained telephone system and proper power construction there would be no induction, but that every time anything abnormal occurred to disturb either, the talking system would be so interfered with as to be impossible of use. To prove the danger of induction under such circumstances the telephone companies desired to call experts and wanted a six weeks' continuance.

The commission held that this was unnecessary, and instructed the power company that it could not get a permit for the highway desired, and it has now agreed to take the road one mile east, which means two extra miles of pole line. The company served notice on the telephone companies and the commission that it would take the necessary legal steps to enforce payment of two-thirds of the extra cost thus entailed from the wire companies, one-third from each, demand for payment of which was made and refused. Meanwhile the power line will be built.

Exchange of Telephone Properties Authorized in California.

The Union Home Telephone & Telegraph Co., of Los Angeles, Cal., and the Pacific Telephone & Telegraph Co. have been authorized by the California Railroad Commission to exchange certain telephone properties.

In the San Bernardino district the Pacific company is to acquire all of the property of Union Home outside of the city of San Bernardino and the Union Home is to acquire most of the exchange property of the Pacific in that city, the latter to retire from all except long distance business in the city.

WAR CONVENTION

Hotel La Salle, Chicago, June 25-28

PROGRAM FEATURES INCLUDE:

Telephone Finance During the War

Rate Increases As Viewed by Federal Authorities

Pros and Cons of Commission Control

War Activities of Telephone Companies

UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION

In Long Beach the Union Home is to acquire most of the exchange property of the Pacific company, the latter to retire from all except long distance business. The Union Home will apply its existing rates to the new service.

In Wilmington, San Pedro and Ventura the Pacific company is to acquire all of the property of Union Home and the Pacific company will apply its present rates to its new service.

The Union Home is authorized to issue $219,000 face value of its bonds, to be sold to the Pacific company at not less than 83⅓, the proceeds thereof to be used to discharge $182,500 of outstanding debentures. The company is also authorized to borrow from the Pacific company $30,000 on 6 per cent serial notes, to be issued at par, the proceeds to be used to consolidate the properties which it will acquire.

The commission held that while the financial condition of the Union Home is such that the authorization of the issuance of these securities to go to the public would not be warranted, it was of the opinion that the whole transaction would be of benefit to both of the companies. Inasmuch as the Pacific company is fully advised of the value of the securities and their purchase in no way affects the rates or service to be given the public, and as these securities will be held by the Pacific company and not sold to the public, it sanctioned the proposal.

Order in Monroe (Neb.) Stock Issue Case Affirmed.

Officers of the Monroe Independent Telephone Co., one of the largest Independent telephone companies in Nebraska, are confronted with the necessity of deciding whether to appeal to the supreme court or to accept what they assert to be an inadequate valuation placed on the property of the Albion Telephone Co., which they propose to make a part of the Monroe system.

The Monroe company operates a small exchange in Albion in competition with the Albion Telephone Co., but made arrangements to purchase from Messrs. Needham and Martin, owners of the competing exchange, all their properties. Owing to the long delays customary in getting permission from the state commission two officers of the Monroe company, Alfred Bratt and John P. Bratt, paid $55,000 for the plant of the Albion company, and then had the company apply for permission to issue stock to pay for it, along with other stock.

In the original opinion, filed a year ago, the commissioners held that as their accountant could find but $26,000 of original capital and sacrifices of officers and owners in the Albion company, no greater amount of stock than that sum should be allowed to issue. As this meant taking over the property at approximately $30,000 less than the Bratts had paid for it, strenuous objections were entered. The commission overruled the motion for a modification, but finally allowed a rehearing asked for on the ground that new evidence relating to the investment in the Albion company had been discovered, and that this evidence would materially change the figures as they were first presented.

Two of the witnesses at the rehearing were Messrs. Needham and Martin, but the commission, in again affirming that its first opinion was correct, holds that their evidence was so contradictory that it cannot be taken as conclusive of the claim made. These two men, as partners, built the company. They kept the most fragmentary books. One was a lawyer in practice and the other the local agent of a railroad company, and their odd hours were first devoted to the company, and later both gave all their time to it. For this they drew $100 a month apiece. One partner said the regular payments began in 1902 and the other in 1908. In holding that it will not recede from its original position the commission says, among other things:

"Mr. Martin testified that fixed salaries were not drawn by either partner until 1908, and that for the eight years preceding that date, irregular sums aggregating $4,000 each were taken from the earnings. He was quite positive that this covered the full amount of compensation. Mr. Needham, upon cross-examination, expressed the opinion that the salaries on the basis of $100 a month started in 1902, and a second reference to the books made him quite positive on this fact. So we have the books themselves, which Mr. Needham kept, and his recollection of the matter as against the recollection of Mr. Martin.

While the bookkeeping was not of the standard now required of public utilities, it was sufficiently complete to disclose how much money was received and how much paid out. Without the testimony of either the commission concluded that the time was the year 1902. Now that we have the testimony of one in support of that assumption and only the unsupported recollection of the other to the contrary, we see no reason to change our conclusion."

The commission allowed them $150 a month apiece from the beginning of the company, and insists that when from this is deducted what they actually drew since 1902, it remains of the opinion that this constitutes an equitable allowance for this purpose. The commission also find that the exchange at Cedar Rapids, which was originally a part of the Albion company and was sold for $2,500, did not represent any additional investment as the money thus received was reinvested in the Albion plant. The same is held to be true with respect to the purchase of the Loretto exchange. This was paid for by giving 21 months of service in the Albion company to the stockholders, and entailed no additional investment by the partners.

It holds there is nothing in the record to show that the property of the Albion company, over and above the $10,629 actually invested by Martin and Needham, plus the allowances in the former order for deferred dividends and services not paid for, was not built out of the surplus earnings of the business, an investment that this commission believes should not be capitalized.

The commission engineer had valued the property at around $47,000 and the company engineer at in excess of $55,000. President Garlow of the state Independent telephone association, who appeared for the Monroe company, severely criticised the commission engineer's valuation, and pleaded for a "business and common sense" valuation of the property by taking the main items of property and estimating their worth, thus arriving at a figure of $62,960.

The commission rejects this valuation, asserting that it has more confidence in the detailed examination of its engineer than in "an office valuation prepared by an attorney who makes no claims to having inspected the plant." It points out that its engineer placed a valuation of $294.50 on the office furniture, while Mr. Garlow figures it at $2,500. It adds: "A difference of over $2,000 in this one item makes us doubtful as to the accuracy of the remainder of counsel's valuation."

"There appears to be no reason," it concludes, "to modify the findings as made in the original order in this case. Nothing new has been developed and no material facts have been changed. The commission has given careful consideration to the arguments advanced by counsel on rehearing, but remains of the opinion that the former order should not be disturbed."

This order is that $106,736 represented the fair value of the consolidated property of the Monroe Independent Telephone Co. and the Albion company, and that stock to this amount could be issued by applicant.

Commission Orders Toll Rates Based on Air-line Mileage.

The Nebraska Telephone Co. has won out in its contest before the state railway commission with the Farmers' Telephone Co., of Dodge County. The commission, after a full hearing, held that the rates in question were discriminatory and could not be permitted. It issued an order requiring the collection of all toll messages to Fremont from any of the six exchanges of the Dodge company be upon the basis of air line mileage.

The situation presented was a peculiar

one, and illustrates the ease with which farmer subscribers to an exchange will take advantage of conditions to secure a low rate, which the commission found in this instance was not a proper one to be charged.

The Nebraska company operates the exchange and system at Fremont. It also has toll lines on all of the exchanges of the Farmers' company, for the purpose of affording toll connections with Fremont, except the exchange at Webster, which has a toll line of its own running into the Nebraska company's terminals at Fremont. The toll line charges of the Bell from these other exchanges range as high as 25 cents.

On the Dodge county system free service is given between all of the exchanges, and the farmer members of the company took advantage of this fact. When they desired to talk with Fremont they simply called up their own exchange at Webster, which cost them nothing, and sent their toll messages to Fremont from there over their own line, paying but 10 cents. The Nebraska company raised the point that this was discriminatory and that it required the company to contribute to the destruction of its own toll business by accepting at its terminals these 10-cent messages.

Several conferences failed to produce any change in policy on the part of the Farmers' company, and a hearing was held, on the Nebraska company's complaint and threat to carry the matter into the courts. The officers of the Farmers' company made no serious opposition, but desired an order from the commission requiring them to put in the air line rates. This was done and the controversy ended.

Small Unincorporated Company Cannot Demand Connections.

Under the Missouri public service act, § 93, subd. 3, requiring telephone companies to make connections with each other when public necessity and convenience require it, an unincorporated telephone company operating a small system owned by its subscribers, and charging tolls to non-subscribers for accommodation merely, is not a company that can demand connection with a large company on the ground of public necessity and convenience.—Buffum Telephone Co. vs. Public Service Commission; Supreme Court of Missouri; 199 Southwestern, 692.

State May Exact Compensation for Use of Highways.

Code pub. civ. laws, art. 23, §§ 359, 405, authorizing telegraph and telephone companies to construct lines, poles, and conduits along roads without liability as for a nuisance, does not place the state under any contractual or other obligation to permit a telephone company to use the highways without compensation. The state may exact compensation from telephone and telegraph companies for the use of the highways for erection of fixtures and telegraph lines.—Chesapeake & Potomac Telephone Co. vs. State Roads Commission; Court of Appeals of Maryland; 103 Atlantic, 447.

Florida Company to Increase Rates on Three Exchanges.

The Florida Railroad Commission, on May 28, authorized the Lake County Telephone Co. to put into effect the following increased rates at its Eustis, Mt. Dora and Tavares exchanges:

Rates within city limits:

	Per Month.
Business one-party	$2.50
Business two-party	2.00
Business extension	1.00
Residence one-party	2.00
Residence two-party	1.75
Residence four-party	1.50
Residence extension	1.00

Rates outside exchange area:

	Per Month.
Business six-party	$2.00
Business eight-party	1.50
Business extension	1.00
Residence six-party	2.00
Residence eight-party	1.50
Residence extension	1.00

These rates are for wall telephones, an extra charge of 25 cents per month being made for desk telephones.

Injury to Employe by Contact with High Voltage Wire.

Where plaintiff's intestate, while climbing a pole to remove a wire for his employer, came in contact with defendant's defectively insulated high voltage wire, which passed about eight inches from the pole, and was killed, the fact that deceased was not wearing rubber gloves, as required by his employer when within reach of live wires, does not constitute contributory negligence as a matter of law. If it was not proved that he grasped the wire, but from his injuries it appeared that he fell upon the wire, the question of contributory negligence was for the jury.—Bell vs. General Electric Co.; Supreme Court of New York; 170 New York Supplement, 170.

Refusal of Commission Chairman to File Transcript.

On an appeal to the circuit court from an order of the state public utilities commission, authorizing a change of telephone rates, where the chairman of the commission, being present in court, refused to file a transcript of the proceedings, the court had jurisdiction of his person, and could punish him for contempt.

Where the chairman of the public utilities commission was punished for contempt for failing to comply with the court's order to file a transcript of the proceedings on appeal, he is not entitled on appeal to have the reviewing court pass on the correctness of the trial court's ruling as to the necessity of filing such transcript, such act being in effect a collateral attack upon the decision of the court which cannot be successful without a showing of want of jurisdiction of the subject-matter.—State Public Utilities Commission vs. City of De Kalb; Supreme Court of Illinois; 119 Northeastern, 423.

Summary of State Commission Hearings and Rulings.

CALIFORNIA.

April 15: Application of Paul Morris for permission to sell the Tuolumne Telephone Exchange to George H. Jones and W. T. Gurney, granted. No. 5309.

April 16: Union Home Telephone & Telegraph Co., of Los Angeles, and Pacific Telephone & Telegraph Co. given permission to exchange certain telephone properties. No. 5314.

April 17: Popoma Valley Telephone & Telegraph Co. ordered to refund to A. V. Storer the service installation charge of $3.50 collected September 19, 1916, under the provisions of its rules and regulations for telephone service, at 523 N. Gordon street, Pomona.

The commission held that a telephone utility is required to return to a consumer a deposit of $3.50 required to assure service for one year when the service is taken for a period of 19 days less than one year and rental balance for a full year is offered and accepted by the utility, irrespective of whether or not the utility subsequently returns the balance.

April 20: California Telephone & Light Co. granted an extension of time to December 31, 1920, within which to reconstruct its electric and telephone lines to comply with the requirements of law, on the condition that at least one-third of the reconstruction work still remaining to be done shall be completed by December 31, 1918, at least two-thirds by December 31, 1919, and the entire work on December 31, 1920. No. 5330.

FLORIDA.

May 28: The commission dismissed the application of the Lake County Telephone Co., for permission to increase its rates at Groveland, the company having disposed of its exchange in Groveland before the date of hearing in the matter. No. 608.

May 28: The commission approved new rate schedules filed by the Lake County Telephone Co. providing for increases in rates at its exchanges in Eustis, Mt. Dora and Tavares. Nos. 605, 607 and 608.

ILLINOIS.

May 13: The Assumption Mutual Telephone Co. was authorized to issue its promissory notes in the amount of $4,500, with interest at 6 per cent, to be dated March 15, 1918, and payable on demand within a period not exceeding five years. No. 7822.

May 13: The Home Mutual Telephone Co. was authorized to issue two promissory notes aggregating $3,587, to be dated January 15, 1918, with interest at 7 per cent, payable on demand. These notes are to take up two notes heretofore issued without the consent of the commission. No. 7904.

May 13: The Pitcher Telephone Co. was authorized to issue its promissory notes aggregating $5,900, dated May 1, 1918, payable on demand with 6 per cent

interest, to take up several notes heretofore issued without the consent of the commission. No. 7750.

May 13: The Millstadt Telephone Co. was authorized to put into effect a new rate of $4 per year for switching service. Heretofore the company has been deducting the switching service from the regular subscriber rate. No. 7645.

May 13: The 4C Telephone Co. is authorized to issue $11,500 of its capital stock, the proceeds to be used in taking up $11,500 of its promissory notes which have been given for the purchase of its telephone plant. No. 7931.

May 13: The Teutopolis Telephone Co. was granted a certificate of convenience and necessity to operate a telephone system in the village of Teutopolis and vicinity. Since January, 1914, this company has been operating a telephone system without a certificate of convenience and necessity from this commission. This certificate is granted to cure the omission. No. 7879.

May 14: The Mason Rural Telephone Co., of Mason, Ill., was authorized to increase its rates from $6 to $7 per year, to become effective May 15, 1918. This increase is necessary to take care of increased wages and expenses of operation. No. 7682.

May 14: The Coles County Telephone & Telegraph Co. was authorized on May 1, 1918, to purchase the telephone system and properties of the Ashmore Telephone Co. and to turn over all books of account and records. This is a supplemental order striking out the paragraph requiring the books of record and accounts to be turned over. No. 7949.

May 16: The Illiopolis Telephone Co. filed a petition asking for certain advances in rates. The commission deems a hearing upon the propriety of rates necessary and suspends rate schedule until October 28, pending a hearing. No. 8127.

May 16: The Mutual Telephone System, of Mulberry Grove, filed a petition asking for certain advances in rates. The rate schedule is suspended until September 28, pending a hearing by the commission. No. 8128.

May 16: The Virden Home Telephone Co. filed a petition asking for certain advances in rates. The rate schedule is suspended until October 28, pending a hearing. No. 8129.

May 16: The Niantic Telephone Co. filed a petition asking for certain advances in rates. The rate schedule is suspended until October 28, pending a hearing. No. 8130.

May 16: The Sangamon County Telephone Co. filed a petition asking for certain advances in rates at Pawnee, Ill. The rate schedule is suspended until October, pending a hearing. No. 8131.

June 4: Hearing at Springfield on the complaint of Joe Harris relative to the discontinuance of service by the Hamilton & Saline County Telephone Co. at Galatia. No. 7922.

June 4: Hearing at Springfield on the application of the Arcola Telephone Co. for an order authorizing the issue of its notes in the amount of $1,750. No. 8102.

June 4: Hearing at Springfield in the matter of the proposed advance of rates for telephone service in Mulberry Grove and vicinity by the Mutual Telephone System of Mulberry Grove. No. 8128.

June 4: Hearing at Springfield relative to the proposed advance in rates in Niantic and vicinity by the Niantic Telephone Co. No. 8130.

June 4: Hearing at Springfield relative to the proposed advance in rates in the village of Pawnee by the Sangamon County Telephone Co. No. 8131.

June 5: Hearing at Springfield on the application of the Farina Mutual Telephone Co. for an order authorizing the issue of $7,000 of its capital stock. No. 8056.

June 5: Hearing at Springfield in the matter of the proposed increase in rates for telephone service in Washington and vicinity by the Washington Home Telephone Co. No. 8085.

June 5: Hearing at Springfield relative to the proposed advance in rates for telephone service in Virden and vicinity by the Virden Home Telephone Co. No. 8129.

June 5: Rehearing at Springfield of complaint of Luke Gossett, J. A. Lippencott, Glen Johns and Arthur John relative to failure of the Coles County Telephone & Telegraph Co. to furnish telephone conections and service to Charleston. No. 7553.

June 5: Hearing at Springfield on the application of H. A. Ball, doing business under the name of the Arrowsmith Telephone Co. for authority to change rates for telephone service in the village of Arrowsmith, McLean county. Answer filed by village of Arrowsmith. No. 8123.

June 5: Hearing at Springfield on complaint of A. R. McDonald, et al., residents of Newman, as to insufficiency of service furnished by the Douglas Telephone Co. at Newman. No. 8135.

June 5: Hearing at Springfield on the application of the Newton Telephone Co. for authority to issue its notes in the amount of $400. No. 8166.

June 6: Hearing at Springfield on the application of the Downs Telephone Exchange for authority to change rates for switching farmer mutual telephone lines. No. 8101.

INDIANA.

June 17: Hearing on the petition of the Lafayette Telephone Co., of Lafayette, Ind., for permission to buy the holdings of the Central Union Telephone Co. in the city of Lafayette for $55,000.

MINNESOTA.

May 29: The commission authorized the Elm Creek Telephone Co., of Sherburn, to increase its rates to $1.25 per month to all subscribers.

June 11: Hearing at Truman on the application of the Armstrong Telephone Exchange Co. for permission to increase its local and rural rates at Truman and Lewisville.

June 11: Hearing at Madelia on the application of the Madelia Telephone Co. to increase its local and rural telephone rates at Madelia.

June 13: Hearing at Arco on the application of the Arco Telephone Co. for authority to increase its local telephone rates at Arco.

NEBRASKA.

May 27: Upon application the Hamilton County Independent Telephone Co. was given ten days to file briefs questioning the jurisdiction of the commission to order it to consolidate its plant at Hampton with that of the Lincoln Telephone & Telegraph Co., on complaint of the Hampton Commercial Club.

May 28: Complaint of Farmers Telephone Co., of Dodge county, against Nebraska Telephone Co., alleging refusal to route toll calls over complainant's line by way of Webster, resulting in toll fee going to defendant; held that defendant is entitled to have all toll messages from respective exchanges of plaintiff company routed over its lines as per contract whereby toll lines were attached to plaintiff's exchanges, to be paid for on air-line charge basis, including calls to Fremont, and that plaintiff is ordered to cease routing toll messages over free service lines to Webster, from which point toll charge is but 10 cents, on the ground that this constitutes discrimination.

May 28: In the matter of the protest of Lincoln Telephone & Telegraph Co. and Nuckolls County Telephone Co. against issuance of permit to Southern Nebraska Power Co. to erect transmission line on road fully occupied by complainants, permit denied, and new route suggested and accepted which avoids complainant's lines.

May 28: Motion of Monroe Telephone Co. for reopening of application for permission to issue certain stock in payment of plant of Albion Telephone Co. The commission upon further investigation finds there is no reason to modify the findings as made in the original order and being of the opinion that the order should not be disturbed, it is so decreed.

May 29: Application of Crooked Creek Telephone Co. for permission to issue $2,500 worth of stock in shares of $50 each, filed.

May 29: Application filed by Firth Telephone Co. for permission to increase rates from a rate of $1 a month for all services to $1.25 a month. The company serves 313 subscribers in a compact territory and has been paying dividends of from 12 to 18 per cent a year. It now finds itself confronted with the necessity of rebuilding a number of its lines, and has no reserve on hand for that purpose.

May 29: In the complaint of John Languis against the Firth Telephone Co. that it refused to furnish him service, the commission issued an order upon the company to string a wire across the road from poles set, and guaranteeing to protect the company's pole line from molestation by adjacent property owner. After the company had received Languis' order for a telephone and upon his compliance with the rule requiring that he furnish four poles and the wire and do the hauling, it took the nearest route to his farm on the opposite side of the road. At this juncture the owner of the adjacent land notified the company that when he plowed down the hedge adjoining, the poles would also be cut down. The company then notified Languis that he must pay for moving the poles to his side of the road, but he refused, as he had complied with all requirements.

June 6: Hearing at Red Cloud of demand of citizens for consolidation of the Lincoln Telephone & Telegraph Co. and Farmers' Independent Co. exchanges, postponed from May 22.

June 7: Hearing at commission offices of complaint of Fred Doxstader against the Southern Telephone Co.

June 12: Hearing of dispute between Tri-County Telephone Co., of Stapleton, and Gandy Switchboard Exchange, at Gandy. This has to do with the percentage Gandy company shall receive for messages entering its office from Stapleton over a wire exclusively owned by the Tri-County company.

PENNSYLVANIA.

May 13: The commission dismissed the complaint of Oil City against the new and increased schedule of rates filed last fall by the Petroleum Telephone Co., ruling that the commission has authority to increase rates over those specified in an ordinance of a municipal council. No. 1721.

Sundry Snapshots Along the Trail

Observations and Comments, Pertinent and Otherwise, On the Sunshine and Shadows of Telephone Work

By Well Clay

A dreamer of dreams
And a schemer of schemes,
He dwells with his thoughts in air.
His hair and necktie
Are sadly awry,
His shoes are in need of repair.

He has millions in mind,
In his purse he can't find
A penny, himself to bless.
But he's happy, at least,
For enough is a feast,
And who cares very much for your dress?

The inventor used to be classed as a harmless sort of lunatic and a dreamer; was set down as being too lazy to work and too impractical, if he did, to amount to anything at all. Yet, what a lot we owe to the dreamers and schemers for our present comfort?

The trouble with the old dreamers was that there was so little to back up their visions that it was hard for them to convince the common people. They had nothing to point to in the way of discoveries to bolster up their arguments.

All the elements of success were already put here by God for the use of man, and, if Adam could have made a dry battery and a telegraph instrument, a message could have been ticked off just the same as it can today. A dynamo would have worked just as well in the Ark as it does now. It would no doubt have been a great convenience to Noah when he was doing the chores, if he could have turned an electric light switch and flooded his heterogeneous and miscellaneous cargo with light.

Think of what Noah had to do without and consider what a job he had on hand in caring for such a mess of menagerie merchandise during the long rain. Most modern people wouldn't enter the place in broad daylight with a gatling gun, let alone messing around them in the dark, probably with the roof leaking

Noah surely showed his great faith in more ways than in constructing the Ark. Noah was a dreamer, and he must have been something of a schemer to build a boat that would house this collection and still float. Noah had very limited resources, but it is a fact that every single truth that we have discovered, was just as true then as it is today and every invention we have today would have worked just as well in his time.

The only thing lacking then was that they hadn't been discovered and utilized. The dreamers are the forerunners of the schemers who take advantage of the visions of the dreamers and bring things one step nearer the point where we can use the new utilities.

Think of Alexander sailing into Cairo with electric lights, ice cream cones and a phonograph! They were just as possible then as today and would have been a much more valuable asset to Alexander than they are today when no one thinks they are at all wonderful. He could have called Cleo. up on the telephone just as well then as now, so far as electricity was concerned, for it was right there ready to work for anyone who understood how to hitch it up.

It is the dreamer who shows us what we have in stock if we only want to use it, but in lots of cases he sees so much that he has no time to waste on individual inventions very long but skips from one thing to another until he becomes unfit to ferret out anything to the point where it can be gotten hold of and used.

Jules Verne dreamed an undersea boat to the minutest detail fifty years before we built them after the pattern his brain conceived. He could have done it himself and taken his great trip personally just as well as it could be done today.

The dreamer does not create anything more than Columbus did when he opened up immigration to our famous winter resorts. He merely sees a little ahead of others what is already there and which has been there all the while, just as an Indian may see a herd of game sooner than a white companion, because he has the stronger vision. The things are all here that the human race will use for all time, but we may consider that a large proportion of the gifts are hidden, so far as we are concerned, as completely as they were to Noah. But we may also know that when we need them they will be there.

As human history unfolds, we find the necessary things at hand and the necessary men who can use them; but, ahead of the procession always, we find, dreamers and schemers who have glimpsed a little of the things in advance of the march of progress.

One of the reasons why I muse along this line today is because we telephone people, as well as the world in general, are approaching a big upward turn in the road. Each forward step unfolds to us new elements which, we see at a glance, will change our course materially, perhaps entirely. How many of us can see as far as around the next corner ahead? How many of us are getting ready to play a larger part in the new order of things than we have been in the past? How many figure to just drift along with the procession and take what comes?

How do we know that there are great changes ahead? The same way a sailor knows that there is a breeze coming. There are always preliminary disturbances ahead, whether they be "catspaws" or atmospheric disturbances. As the water in front of a big ship, going at full speed, awakens and is tossed about in advance of the big displacement that takes place when the ship passes, so the dreamers and schemers awaken ahead of the big world changes and thus indicate that something different is coming to stir the still waters of life to a much greater activity.

Whether these same dreamers are able to tell within a mile of what is coming, is no criterion. The fact that they are looking for something ahead shows that something is due.

The mere fact that the government has made such radical moves in taking over the railroads, raising the wages of all the railroad employes and obligating itself to make up the operating deficit, which is going to be stupendous, is of itself sufficient without the further evidence of the war, to show that there is going to be some doings at our house soon. The economic eagle of America is moulting and some new and possibly strange feathers are going to be observed in its new plumage.

Have you considered what your status is going to be in the new order of things and, on the other hand, the status of your employer, the public? In what way will the dropping of all the old arguments about costs of service and nature of the serving affect your business relations—with the rural subscriber, for instance?

This mountain of new and extraordinary expense which will finally find its way onto the tax bill of the farmer, who actually produces food for us to eat and clothes for us to wear, is going to bring with it some great changes, if it is to be successfully borne. The farmer will have to become a decidedly shrewd business man, taking advantage of all the direct and indirect helps possible, if he is to keep his financial ship off the rocks.

The mere fact that he will have a big income will not be conclusive evidence that he is doing well, if conditions are such that the purchasing power of a dollar has diminished to the vanishing point. The farmer will have to take advantage of the tractor, the telephone, the automobile, the dynamo, the milking machines, the trade paper and the weather

bureau's service, if he makes any headway at all, you may be sure.

Perhaps he will even have to have a few flying machines handy as well, to save time in getting repairs quickly some morning when the milking machine goes on a strike because cows, and especially the blooded kind that he will have to keep to produce the maximum of output, must be milked on schedule time or suffer. Mr. Farmer can telephone to the city to have the extras ready and, while Mother is operating the electric cooker, Father can fly into the city and get the repairs before breakfast.

At any rate, the telephone is going to be one of the servants of the public in the new order of things and the basis of its use—the cost—will have to be adequate. The wires may be underground or aerial, the instrument may or may not be wireless, the rate may or may not be on a flat charge basis, the instrument may or may not be of the secret service kind—but the telephone will be there and the charges for the use thereof.

Have you picked out your job in the immediate henceforth?

You may think with your superior knowledge you could have beaten Columbus a mile by going to New York where real estate had a future instead of landing on a sandbar in the rural districts. You may think Sir Isaac Newton was not so much after all to tell the people such a simple fact which is now evident to all.

You may think that Moses was something of a mossback to take forty years to get the Children of Israel a distance which you could cover before breakfast on a good motorcycle. You could have beaten Nero's fell designs with a few fire extinguishers and a hand grenade. You could have held the pass at Thermopylae with a machine gun without soiling your Palm Beach suit and kid gloves.

In fact, all the big moves of history do not look so big nor difficult in the light of later events, now that we know all about both sides of the times in which they happened, but in the time which immediately preceded them, things looked different—the same as in a wager.

This brings us up to now with the stage all set for a new scene in which you know as much about the future as did the heroes of old. We await your next move with interest.

APHORISM: Foresight is still a hundred-to-one shot.

First Group of American Operators to Land in France—Capt. W. S. Vivian is Standing on the Extreme Left.

American Telephone Operators and Lines in France.

The accompanying illustration shows the first group of American telephone operators to arrive in France. On the extreme left, stands Capt. W. S. Vivian, secretary-treasurer of the United States Independent Telephone Association, who has charge of the housing and welfare of the operators.

As has been stated in a letter from Capt. Vivian, published in a recent issue of TELEPHONY, the girls were assigned to their stations and commenced work very soon after their arrival. That the reception accorded them was cordial is testified to by The Stars and Stripes, the official newspaper of General Pershing's force. It says:

"They're here and there! They say 'seventy-five' instead of 'sixty-fifteen,' as the French ones do. They say 'Hold the wire' instead of *'Attendez un moment'*; 'General Pershing' instead of *'le Général Peurchigne,'* and 'THAHN-KEW!' instead of 'MAIRR-SEE!' In short, it seems like home to hear them talking over the wires.

"The original 33 of the phonettes' Expeditionary Forces have made good on their jobs. Equally at home in French and English, they juggle the two languages about with marvelous dexterity, and all without disturbing a back comb. Their work is important work. We wonder how we got along without them all this time."

In a recent statement, Secretary of War Baker reveals the fact that there are more than 4,000 miles of wire used by the United States forces abroad for telephone and telegraph purposes. He said:

"Another item of information that gives you some idea of what we have been able to do on the physical side alone, is the fact that the Signal Corps is now operating in France, purely for the supply of the American Army, and for its business and military undertakings, more than 4,000 miles of wires, either for telephone or telegraph, the greater part of which they had erected, and some few lines they have leased from the French and British governments."

"Telephony's" Home Study Course for Telephone Men

A Complete Presentation of the Principles Underlying Modern Telephony in All Its Branches—Arranged Systematically So That Regular Reading and Faithful Study Will Qualify Ambitious Men for Higher Positions—Prepared Under Supervision of Stanley R. Edwards—This Section Written by Jay G. Mitchell

Quiz Questions on the Preceding Installment.

984. How are the ringing periods timed? What modification is necessary in Fig. 275 so that the trunk circuit arrangement may be used for selective ringing?

985. In the operation of the keyless trunk, what is the operator required to do? How is the incoming trunk operator advised that the trunk assignment has not been acted upon by the A operator?

986. Trace the path for the flow of current through the winding of relay 18, Fig. 276, when the normally open contact of relay 6 connects the negative or non-grounded terminal of the common battery to one winding of relay 18.

987. What are the special features of the circuit just traced?

988. What is the effect of the operation of relay 18 due to the seizure of the assigned trunk by the A operator at the distant originating office?

989. Outline the actions which take place when the called subscriber removes his receiver from the hook.

990. Why is the intermittent ringing at the called subscriber's station discontinued?

991. Why cannot the bell of the called subscriber be rung again should he replace his receiver first?

992. What function does relay 7 in Fig. 276 perform?

CHAPTER XXIX. Inter-Office Trunking (Continued).

993. *Relative time length of ringing and silent periods.*—It is obvious that a ringing control commutator whose actual construction approximates that shown in Fig. 275 will produce ringing periods and silent periods of equal time length. Such an arrangement would not be in accord with the present trend of operating practice.

It seems to be fairly well established that the silent period should be longer than the ringing period. In practice, the actual time length of the silent period ranges from a usual maximum of ten seconds to a minimum of four. The ringing period, on the other hand, ranges from a maximum of about ten seconds to a minimum of three.

Where selective systems with tuned ringers are employed, it is quite necessary that the ringing period be not made too short to permit the low-frequency, slow-moving tuned ringers of the party line circuits to reach their ringing amplitude.

If the ringing period is made too short, there will be occasional failures when calling selectively for stations equipped with the lowest frequency ringer due to the failure of the ringer clapper to reach ringing amplitude before the ringing current is interrupted. For this reason it is often impossible to justify a very short ringing period when other considerations seem to be favorable to it.

994. *Effect of ringing period upon subscriber's answering time.*—Within reasonable limits, the short ringing period and the short silent period, provided they are fixed with proper consideration of all other conditions, will be productive of a shorter average subscriber's answering time than the longer periods.

Should the ringing period be made so short, however, as to prevent the positive operation of all ringers, the average subscriber's answering time would obviously be made longer by the failures of the ringers on occasional calls.

It is not possible, as a practical matter, to inaugurate sudden and pronounced changes in length of ringing periods and of silent periods owing to the public. The telephone-using public quickly notices changes of this character and complains vigorously if such changes do not accord with its fancy. In such cases it may be necessary to arrive at the desired result by making the adjustment in the ringing periods in several steps so that the desired reduced average subscriber's answering time is reached gradually. When this is done the public responds without serious complaint.

995. *Necessity of dividing the ringing load.*—When the ringing in any given telephone office is performed manually, it is not likely that the several operators will begin to ring on connections at precisely the same moment. This natural division of the demand for ringing current means that the ringing machine is sure to be relieved from the effect of any suddenly-imposed and suddenly-removed peak loads.

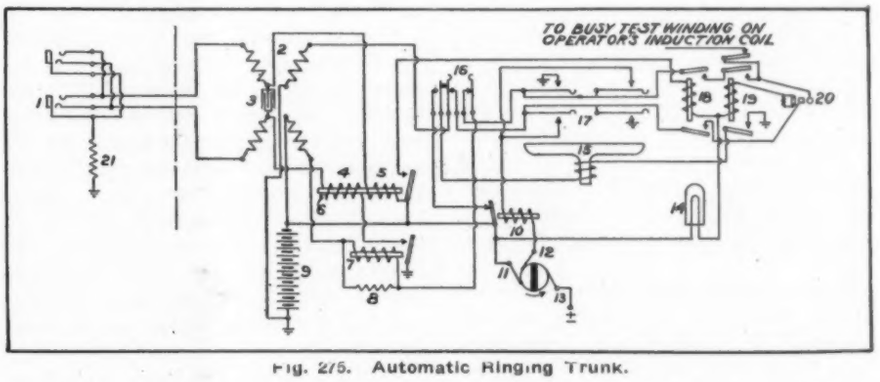


Fig. 275. Automatic Ringing Trunk.

When "machine ringing" or "automatic ringing" commutator control is in use, however, the mechanical arrangement means that a sudden load is thrown on the ringing machine whenever the ringing control commutator reaches the ringing position. The same fact renders it inevitable that the total ringing load will be as suddenly withdrawn when the ringing control commutator reaches the silent period position.

In offices having a very heavy traffic load, this is apt to cause trouble in the common ringing equipment unless means are adopted to prevent it. In practice there are several methods used for this purpose. The actual arrangements used for this purpose will be described in connection with the improved manual, automatic, semi-automatic and semi-mechanical equipment with which they are employed.

996. *Individual ringing control.*—In some of the connecting equipments, both those manually operated and those mechanically operated otherwise, the division of the ringing load has been attained by providing individual ringing control for each connecting circuit. This places

the ringing load on precisely the same basis as it occupies when the switchboard is manually operated. In other words, the ringing of each called telephone bell is started at a time that is not dependent upon other features of the operation incidental to the complete call.

When the connection has reached the proper stage, the equipment, in such circumstances, begins the work of sending out interrupted ringing current. This flow of the ringing current over the called telephone line is controlled solely by the circuit conditions existing in the connecting cord or trunk. In other words, when the called subscriber answers the call, the ringing current is discontinued on the connecting circuit that is serving him.

On other connecting circuits the same condition prevails and the operation of the ringing control of one circuit has no effect upon any other. It is obvious that such an arrangement will prevent the imposition of a sudden heavy load on the ringing machine because it is almost certain that no great number of connections will reach the ringing stage at the same instant.

It also prevents the sudden withdrawal of the load from the ringing machine because it is certain that no great number of telephone subscribers will answer at precisely the same instant. In other words, the effect, as far as the load conditions of the ringing machine are concerned, is precisely the same as the same conditions when the ringing is controlled manually.

The division of the ringing load is of especial importance owing to the great use of selective party-line systems employing the frequency converter. The operation of such devices is much more satisfactory when they are not required to assume suddenly increased or decreased peak loads.

For this reason when it is not possible to provide the individual connecting circuit ringing control, it is customary to subdivide the equipment through which the ringing current is supplied into as small groups as practicable. In this way the accretions of load due to any given group are kept at a minimum value.

(To be continued.)

Dallas Merger Now Up to U. S. Department of Justice.

The proposed merger of the exchange of the Southwestern Telegraph & Telephone Co. and the Dallas Automatic Telephone Co. in Dallas, Texas, has been passed to the United States Department of Justice for approval.

The merger of the two exchanges was approved by the people of Dallas at an election held April 2, giving the telephone companies 90 days from that day in which to accept the terms of the merger ordinance voted upon and approved. It is reported that both companies are willing to accept the ordinance, provided the sanction of the authorities in Washington is obtained.

It is possible that an extension of the time for acceptance will be asked for by the telephone companies, unless the matter is passed upon in Washington within the next two or three weeks.

Present Status of Telephone Rate Situation in Texas.

The status of the several rate cases in Texas remains about the same as during the past month. The Southwestern Telegraph & Telephone Co. has recently announced increases of rates in a number of Texas towns and cities.

In San Antonio and Houston, where the Southwestern company announced increases to $3 for residence and $7.50 for business telephones, with an alternative measured service plan, the rates have not yet been approved by the city authorities. In Fort Worth those rates are in effect, but still subject to review by the courts in an injunction suit now pending. In Beaumont, Texas, rates were increased, effective June 1, from $2 and $4 to $2.50 and $5. No definite action has yet been taken by the city on the matter.

In Waco, where the Texas Telephone Co. announced an increase of rates some months ago, the matter is still pending before the city commission, awaiting the completion of reports of engineers and auditors. It is expected that fianl decision will be reached during June.

The Texas Telephone Co. has also increased local rates in several smaller towns, principally Clifton, Meridian and Walnut Springs, Texas. This company has eliminated party lines in town in a number of places. Similar changes in rates have been made by a number of Independent telephone companies in Texas.

Bell to Make Physical Connection at Traverse City.

After a four years' battle, the Michigan State Telephone Co. must provide connections with the lines of the Citizens Telephone Co. at Traverse City, Mich., for Bell toll and long distance service.

The Michigan Railroad Commission recently instructed the Michigan State Telephone Co. to install facilities for the interchange of calls. The order follows a supreme court decision affirming the commission's original order of four years ago.

Telephone Exchanges in Austin, Texas, Now Consolidated.

The two telephone exchanges in Austin, Texas, the capital city of that state, were merged June 1, the Southwestern Telegraph & Telephone Co. taking over the Independent property, which operated but a few telephones.

Under the merger ordinance passed by the city commission of Austin about a year ago, and accepted by the telephone companies, the Southwestern company is to erect a new telephone building in Austin, work upon which must be begun by July 1, 1918. Other improvements are to be made in the exchange plant.

The new rates, approved in the merger ordinance of $5 for business telephones, will become effective when the telephone company occupies the new building. The residence rate remains $2 a month, as before.

Program for the North Dakota Telephone Convention.

The North Dakota Telephone Association has prepared an interesting program for its annual convention which is to be held on Wednesday and Thursday, June 12 and 13, at Bismarck, N. D., which should prove profitable to all who are able to attend. The entertainment features include a theater party Thursday evening at the Grand theater, where the great telephone motion picture, "The Whispering Wires of War," will be shown. The program follows:

WEDNESDAY MORNING.

Address of welcome, by Gov. Lynn J. Frazier.

Response, by J. Carmody, Hillsboro.

President's address—H. W. Wilson, New Rockford.

Reading of minutes of preceding convention.

Report of standing committees.

Appointment of committees.

WEDNESDAY AFTERNOON.

"Commission Regulation," by representative of North Dakota Railroad Commission.

"The Small Exchange Operator," by Esther Sorenson, traffic supervisor, North Dakota Independent Telephone Co.

"The Telephone and the Fire Alarm," by H. L. Reade, state fire marshal.

"The Managers' Problems," by A. J. McInnes, manager, Central North Dakota Co-operative Telephone Co.

Salesmen's talks.

WEDNESDAY EVENING.

Association luncheon.

Big patriotic meeting.

Music and speaking.

Principal address, "The Mobilization of Our Resources," by Tracy R. Bangs, Grand Forks.

THURSDAY MORNING.

Managers' conference and meeting with board of railroad commissioners.

THURSDAY AFTERNOON.

"Taxation," by Frank E. Packard, of the North Dakota Tax Commission.

"Savings on Maintenance," by M. E. Young, Chicago, Ill.

Election of officers.

Adjournment.

Practical Subjects—Discussions

A Home-Made Torch for Soldering Fine Wires.

Gust Gilberston, Elk Creek, Wis., repairs some of the telephones for such farmers as will bring in their instruments to be repaired. He quite often found little wires had to be soldered. Not having a torch, or an iron, he expropriated his wife's sewing machine oil can, put on a longer spout with a little larger opening in the end.

This spout he made from a piece of copper taken from the bottom of an old wash boiler. Through this spout he pulled a piece of flour sack as a wick.

Next he secured a piece of copper about 3/16-inch square by 1½ inches long. Being afraid it might become overheated and besides needing only a torch flame sometimes, he soldered a mace-thread screw-eye, soldering the eye to the spout just far back enough so the copper would come over the flame of the torch nicely. Then the copper was drilled and tapped so it would screw on the screw-eye.

Back of the screw-eye he fastened a wire support so when the torch is laid down on its side, it will be just right and the wick will draw well and not get too hot on the table from the flame.

The outfit is certainly practical and works fine. Because it was all home-made out in the country, makes it all the more interesting.

Mankato, Minn. R. O. Palmer.

Improvised Insulator Brackets.

By C. E. Cunningham.

It sometimes occurs that when it is necessary to support an electrical conductor, such as a telephone or an electric light wire, to a building, brackets of the type regularly manufactured for the purpose are not available. However, satisfactory ones can readily be constructed as shown in the illustrations.

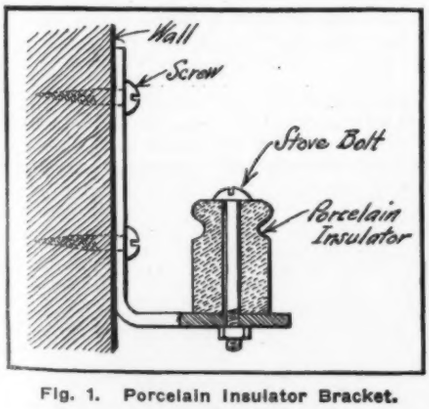


Fig. 1. Porcelain Insulator Bracket.

Brackets are frequently necessary when an electric lighting or telephone circuit is being carried from a residence to a barn or between buildings.

The insulator bracket of Fig. 1 is made by bending a piece of strap iron into an L-form and fastening to it a porcelain knob with a stove-bolt.

Porcelain knobs do not have high insulating values and hence should not, preferably, be used for electric lighting circuits. A splendid bracket and insulator for an electric lighting circuit can be constructed, as outlined in Fig. 2, by cementing a piece of strap iron, which has been bent into an approximate U-form, into the hole in a glass or procelain insulator. Either plaster of Paris or Portland cement may be used. Plaster of Paris is often the more convenient because it sets very rapidly.

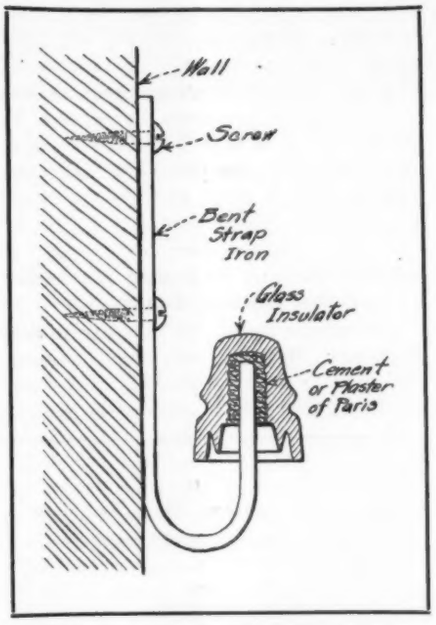


Fig. 2. Glass Insulator Bracket.

The strap iron supports for both of the insulators should have holes drilled through them for the accommodation of wood screws.

What Happened to the Telephone Coin Collector Chute.

Although "23, Skidoo," is now out of date, this incident may be of interest to TELEPHONY's readers. The other evening one of our operators reported that the nickel slot of a Gray coin box was choked.

She said that a woman tried to drop five pennies in the nickel slot and only got two in. She then tried to put the next nickel in, but it only dropped beyond reach. When the troubleman opened the box in the morning, he found that apparently four of a previous five pennies had got through all right but the last one caught just as it was leaving the chute.

This stopped the next three nickels, the two pennies and the last nickel, a total of 23 cents, which apparently said "skidoo" to any more money.

Pa. Paul H. Shuey.

Some Ideas on Various Exchange Management Topics.

I obtain a great deal of enjoyment and profit from TELEPHONY and, in fact, believe that if anyone gets any more than I do, it is because we are twins. Well Clay is responsible, in part for our sending to you at this time a bunch of our forms, ideas, a directory, etc.

We keep a card index of each switchboard drop number, and on the card a record of the subscribers and their rings on this line. This tells us at a glance what kind of service is given on any line, the number of subscribers already connected, and the rings open for use.

We use, for residences, individual lines, four-party selective, and nine-party selective or straight. The nine-party selective is one of my own stunts and I wonder if it would be of interest to anyone else?

In keeping track in this "season" place where people are continually on the move, and in getting out the directory, we find this scheme very simple and it works well. This year we had most of our directory linotyped—we printed it in the shop—and like that way better than setting the type by hand.

Drop No. 35, individual residence.

Gould, L. A.	(desk)

Drop No. 89, party-line residence.

1-M—Bloxham, C. M.	(wall)
2-J—Colton, The	(wall 1PS)
3-R—Goodman, H. W.	(desk)
4-L—Blaisdell, Miss J. E.	(wall)
5-81—Chambers, P. A.	(wall)
6-8M—Burleigh, G. S.	(wall)
7-	
8-8R—Vittum, Albert	(wall)
9-8L—Boyd, Jas. (wall and desk ex.)	

(This line will take one more selective or a straight ring.)

Drop No. 72, four-party selective residence.

1-M—Pushee, John E.	(wall)
2-J—Merrill, Miss M. E.	(wall)
3-R—Stroud, J. J.	(wall)
4-L—Heyward, C. P.	(desk)

Sample Line Records.

By our next issue I hope to have it all in linotype and have one-point rule instead of two-point, and some other improvements.

Bernard W. Leavitt.

Southern Pines, N. C.

Financial Statements and Reports

Annual Reports of Independent Telephone Companies in Various Parts of the Country Covering Operations During Year 1917—Grinnell, Iowa, Company Says Rate Increase Is Necessary If Costs Continue to Increase

Annual Report of Interior Telephone Co., Grinnell, Iowa.

The annual report of the Interior Telephone Co., of Grinnell, Iowa, recently submitted by President Harold L. Beyer to the stockholders, shows gross revenues of $35,865 for the year 1917. The operating expenses totaled $27,887, leaving net earnings of $7,987.

After making deductions from the net earnings for taxes, interest, other miscellaneous charges, and $3,238 for dividend appropriations, there was a balance of $621 which was credited to surplus. The detailed statement of income and expense for the year ended January 1, 1918, follows:

Statement of Income:	
By exchange service revenues:	
Grinnell	$22,317
Montezuma	10,113
By toll service revenues:	
Grinnell	2,731
Montezuma	502
By miscellaneous operating revenues:	
Directory advertising (Montezuma)	54
Other miscellaneous operating revenues	18
	$35,735
By non-operating revenues:	
Interest revenue	49
Miscellaneous non-operating revenue	81
Total revenues	$35,865
Statement of Expenses:	
To maintenance expense	$13,358
To traffic expense	9,209
To commercial expense	1,983
To general office salaries	2,400
To general office supplies and expenses	230
To insurance	477
To miscellaneous general expenses	230
Total operating expenses	$27,887
To uncollectible operating revenue charged off	97
To taxes assignable to operation	1,458
To interest deductions for funded debt	2,428
To dividend appropriations of income	3,238
To miscellaneous appropriations of income	131
To miscellaneous charges to income	5
To surplus	621
	$35,865

On account of the extraordinary financial and trade conditions prevailing during the past year the company has deemed it inadvisable to make definite plans for new equipment at its Montezuma exchange. The exchange, however, has reached its full switchboard capacity and additional facilities will soon have to be provided.

President Beyer states that the company has found it necessary to provide for increased revenue and the first step in this direction was the elimination of free service between exchanges. However, if the costs continue to increase, he stated that it will be necessary to raise rates for local service. The company balance sheet is given in the accompanying table.

Annual Report of Large Nebraska Farm Mutual Company.

The annual report for the year ending December 31, 1917, of the Glenwood Telephone Co., of Blue Hill, Neb., one of the larger farm mutual companies of Nebraska, shows the possession of over $58,000 worth of property. The company is made up of 12 exchange companies, and has not heretofore aimed to make any dividends, each of the more than 1,500 stockholders having paid for his own instrument and the building of his own stub line.

The company, through renting a small number of telephones to non-stockholders, has come under the direction of the commission, which is urging a reformation of the company to place it upon ordinary stockholding company basis. The company's financial report is as follows:

ASSETS.

Real estate	$ 300
Buildings	3,500
Exchange central equipment	2,308

ASSETS.

Plant:		
Fixed capital installed prior to January 1, 1914	$ 76,276	
Land and buildings	14,851	
Central office equipment	1,054	
Station equipment	4,825	
Exchange lines	4,994	
Exchange underground	2,074	
General equipment	1,405	
Office furniture and fixtures	2,293	
Total	$107,772	
Reserve for accrued depreciation	14,470	
	$ 93,302	
Investments:		
Liberty Bonds	$ 306	
	$ 306	
Working Assets:		
Cash in banks	$ 803	
Employes' working funds	63	
Rental accounts receivable	$1,018	
Prepaid rentals 593	425	
Toll accounts receivable	1,102	
Sundry accounts receivable (includes employes' Liberty Bond subscriptions)	795	
Miscellaneous accounts receivable	45	
Materials and supplies	334	
	$ 3,567	
Deferred Debit Items:		
Prepaid directory expense	$ 23	
Prepaid office expense	116	
Other expense (corporation insurance on life of president)	4,049	
	$ 4,188	
Grand total	$101,363	

LIABILITIES.

Stock:		
Common stock	$ 23,425	
Preferred stock	28,375	
Service stock	1,200	
	$ 53,000	
Long Term Debt:		
Funded debt (bonds)	$ 33,500	
Real estate mortgage, Grinnell	4,171	
	$ 37,671	
Working and Accrued Liabilities:		
Audited vouchers	$ 733	
Accounts payable (tolls)	854	
Accounts payable (Federal Reserve, employes' Liberty Bonds)	525	
Taxes accrued	1,008	
Water accrued	8	
Interest accrued on bonds	532	
Dividends accrued	1,554	
	$ 5,214	
Corporate Surplus:		
Surplus	$ 5,473	
Grand total	$101,363	

Statement of Assets and Liabilities of Interior Telephone Co.

Front View of Southwestern Home Company's Exchange at San Jacinto, Cal., Just After the Earthquake—Interior of Exchange.

Exchange aerial equipment	46,762
Exchange underground equipment	31
Exchange substations	1,805
Toll equipment	1,531
Utility equipment	154
Material and supplies	270
Accounts receivable	1,447
Total	$58,108

LIABILITIES.

Capital stock	$39,875
Notes payable	5,250
Accounts payable	1,501
Profit and loss	11,483
Total	$58,108

REVENUES.

Toll	$ 1,367
Subscribers' service	17,783
Sundry sales	116
Miscellaneous	517
Total	$19,783

EXPENSES.

Maintenance	$ 7,837
Operative	8,823
General	1,182
Total	$17,842

Out of the net operating come $1,941, the company paid interest, $127; taxes. $267; internal revenue taxes, $204; on note, $200; occupation permit, $20, a total of $718, leaving a net surplus of $1,223. For new construction, including a central office, $3,500, the company spent $6,420, which wiped out the accumulated surplus and left a deficit on the company's books of $1,821.

The company operates exchanges and telephones as follows: Ayr, 79; Bladen, 318; Blue Hill, 358; Cowles, 120; Guide Rock, 70; Holstein, 250; Lawrence, 20; Mt. Clare, 35; Pauline, 32; Reeves, 90; Roseland, 218; Rosemont, 993, a total of 1,703.

L. C. Peisiger is president of the company; J. L. Hynes, vice-president; F. C. Buschow, secretary; Ed. Hall, treasurer.

Damage to California Telephone Exchanges by Earthquakes.

The accompanying illustrations show some of the damage done by the recent earthquake at San Jacinto, Cal. The brick building next to the exchange of the Southwestern Home Telephone Co. collapsed, the north wall falling through the roof of the telephone exchange. One of the views shows the interior of the San Jacinto exchange immediately after the quake.

Carl D. Rolfe, superintendent of the Southwestern Home company, states that the company has been unable to correctly estimate the damage to its plant but believes that the worst will be in moving into temporary quarters and again into permanent quarters.

The company rendered long distance service out of both San Jacinto and Hemet one hour after the earthquake. At San Jacinto the company had the wreckage cleared up and was rendering service six days after the quake and at Hemet service was restored in eight days. In Hemet the company had to move its exchange to another location, while in San Jacinto the wreckage was cleared up and a tent thrown over the switchboard, and the company is rendering service on the old site.

One of the accompanying views shows President Chas. A. Rolfe in front of the temporary headquarters at San Jacinto and another shows the home of Aunt Rye, one of the characters in "Ramona," by Helen Hunt Jackson, which is located in San Jacinto.

Louisiana Merger Awaits Sanction of Attorney General.

The Shreveport (La.) Chamber of Commerce recently approved the proposed merger of the Shreveport Home Telephone Co. by the Cumberland Telephone & Telegraph Co., after it had obtained an agreement from the Bell that it would not request an increase in local rates before June, 1923. The Lions Club, Retail Merchants' Association and Ad Club have also approved the merger.

The merger has the sanction of the state railroad commission and will be consummated as soon as the approval of the Department of Justice has been secured.

The Bell company operates about 4,000 telephones in Shreveport and vicinity, while the Home company operates but 2,000 telephones. A consolidation of the systems would result in the elimination of 800 duplicate instruments.

Home of Aunt Rye, One of the Characters in "Ramona"—President C. A. Rolfe in Front of Temporary Exchange Quarters.

Biographical and Personal Notes

C. O. Malthaner, formerly with the Tri-State Telephone & Telegraph Co., of St. Paul, Minn., is now instructor in electricity and radio in the Signal Corps School at Fort Leavenworth, Kans. Mr. Malthaner was made a sergeant May 1.

Harry H. Read resigned his position as manager of the Bruce Mutual Telephone Co., of Bruce, Ill., effective June 1.

H. O. Leinard, for the past year manager of the Cleveland district of the Ohio State Telephone Co., was recently appointed general manager of the state organization under President C. Y. McVey, assuming his new duties June 1. Prior to his appointment to the position of manager of the Cleveland district about a year ago, Mr. Leinard was assistant treasurer and commercial superintendent of the Ohio State company at Cleveland.

His connection with the telephone business dates back 11 years, when he became purchasing agent of the United States Telephone Co. In 1910 he was made secretary and treasurer of the Cuyahoga Telephone Co. and in 1914 was appointed commercial superintendent and assistant treasurer of the Ohio State Telephone Co. at Cleveland when it took over the property of the Cuyahoga Telephone Co.

Mr. Leinard is a member of the Wholesale Merchants' & Manufacturers' Board, a director of the Chamber of Commerce, and also of the Electrical League. He is also a member of the Credit Men's Association, the Rotary Club, the Cleveland Ad Club and the Cleveland Athletic Club.

In addition to his interest in the Ohio State Telephone Co., he is secretary, treasurer and general manager of the Citizens Telephone Co., of Berea, and assistant secretary, assistant treasurer and general manager of the Portage County Telephone Co., of Ravenna, Ohio.

Mr. Leinard has been active in both civic and patriotic undertakings in Cleveland, having performed a notable service in the Liberty Loan and War Chest organizations. He is an organizer by nature and by training and the wealth of his experience assures him success in the larger undertaking he now assumes.

General Manager H. O. Leinard.

C. L. Danner, general manager of the Wilson Telephone Co., Wilson, Kans., is active in war work in his community and is setting a good example for all telephone men. In addition to being chairman of the Ellsworth County Council of Defense, Mr. Danner is chairman of the Ellsworth County Food Administration and the Ellsworth County Four-Minute men. He also serves on the Fuel Committee of Ellsworth County. Between times Mr. Ellsworth acts as assistant to the advisory board to the local board of Ellsworth County, as clerk of S. D. No. 10, Ellsworth County and as Republican precinct committeeman.

S. R. Jones, for the past several years district plant chief for the Southwestern Bell Telephone Co., with headquarters in Winfield, Kans., has severed his connections with that company. Mr. Jones has purchased a telephone exchange at Linn Creek, Mo., which is known as the Camden County Telephone Co., and will assume active charge.

Obituary.

Colonel Jack Love, of Oklahoma City, Okla., head of the Oklahoma State Corporation Commission, died in Mineral Wells, Texas, June 1. Mr. Love was 61 years old, and had been a member of the Oklahoma commission since 1907. He was one of the best known men in Oklahoma.

C. C. Bickel, one of the organizers of and for two or three years president of the Louisville Home Telephone Co., of Louisville, Ky., died at his home recently as a result of a general breakdown.

From Factory and Salesroom

Conventions: North Dakota, Bismarck, June 12-13; United States, Chicago, June 25-28

New Specifications for Western Red Cedar Poles.

The Western Red Cedar Association has issued its new official specification for western red cedar poles as revised April 30, 1918. One of the principal changes in the specifications is that the association now grants a minimum measurement at the extreme butt on poles 35 feet and longer. The specifications for standard western red cedar poles 4-inch, 20-foot and larger, are as follows:

1. Live Timber—All poles must be manufactured from live growing cedar timber.

2. Manufacture—All poles must be peeled, knots trimmed close and butts and tops sawed square.

3. Variation in Length—Poles may be 6 inches longer or 3 inches shorter than length specified.

4. Knots—Knots are not a defect, if sound, trimmed smoothly and do not plainly impair the strength of the pole.

5. Discoloration—Discoloration is not a defect.

6. Miscellaneous Defects—No poles shall contain sap rot, woodpecker holes, plugged holes or evidence of having been eaten by ants.

7. Rot—Tops of poles must be free from rot. Butt rot in center, including small ring rot, shall not exceed 10 per cent of the area of the butt. Butt rot of a character which impairs the strength of the pole above the ground line is a defect.

8. Cat Faces—Sound cat faces are not a defect if no part of the cat face shows on the upper one-fifth of the length of the pole or within two feet above or one foot below the ground line.

9. Dead or Dry Streaks—A sound dead or dry streak is not a defect if it does not cover more than 25 per cent of the surface of the pole at any one point.

10. Minimum Measurements—(a) The tops of all poles shall have a minimum circumference measurement as shown in table No. 1.

(b) The extreme butt of all poles shall have a minimum measurement as shown in table No. 2.

(c) Poles having a decided swell or flare at the butt shall have a sufficiently larger measurement at butt to insure a reasonable measurement at the ground line.

11. Short Kinks—Short kinks are not permitted.

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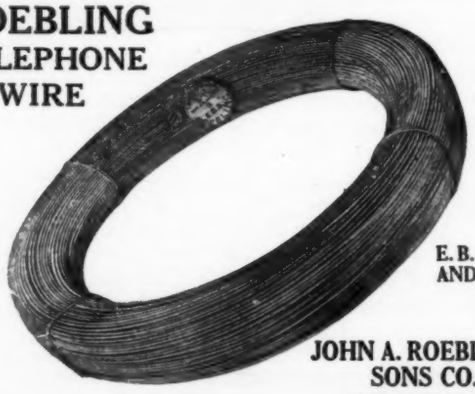

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Joints go together quickly and smoothly, forming a continuous waterproof duct, absolutely proof against current leakage—with no offsets, seams or projections to injure the cable, and no expense for burlap wrappings or cement

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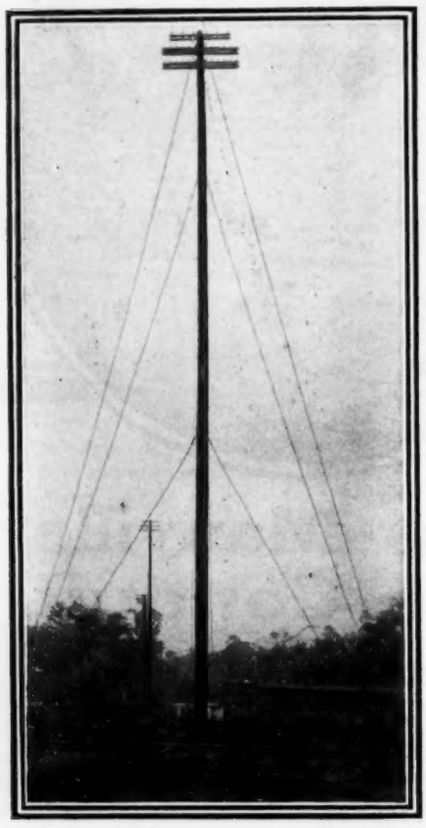
JOHNS-MANVILLE

stalled in the Stromberg-Carlson plant for grinding magnets and castings to proper size. This machine weighs several tons and is driven electrically by an individual motor.

It is shown grinding 40 permanent magnets at one operation and doing the work which formerly required the services of eight men working at as many smaller grinders.

The work is clamped to a traveling bed, similar to that used on planers, and is carried back and forth across the face of the circular grinding wheel, which can be adjusted to take either a fine or coarse cut at the will of the operator. It is provided with an automatic gauge which indicates when the grinding limit is reached. The machine does accurate work and can be set to operate to a fraction of a thousandth of an inch.

Prices of Stromberg-Carlson telephone apparatus have not advanced in proportion to many other forms of manufactured articles. This is largely due to the efforts which the management and engineers have put forth to increase production and lower manufacturing costs without sacrificing in any way either the quality or efficiency of the product.



100-foot Pole on West Side of Neches River.

Lasting Qualities of Poles Treated with Creosote.

The two 100-foot poles shown in the accompanying illustrations carry the wires of the Postal Telegraph-Cable Co. across the Naches River at Beaumont, Texas. One of these poles measures 22½ inches in diameter at the butt, the other 24 inches, while both measure exactly 10 inches in diameter at the top.

These poles were treated their entire length, 24 pounds of creosote oil per cubic foot having been injected. They were furnished by the International Creosoting & Construction Co., of Galveston, Texas, and placed in service in 1908 and are at present said to be in perfect state of maintenance without a cent's expenditure.

The photograph of the two 110-foot poles shown in another illustration was taken last fall, just before they left the International Creosoting company's plant for Shreveport, La., where they are now being used by the Western Union Telegraph Co.

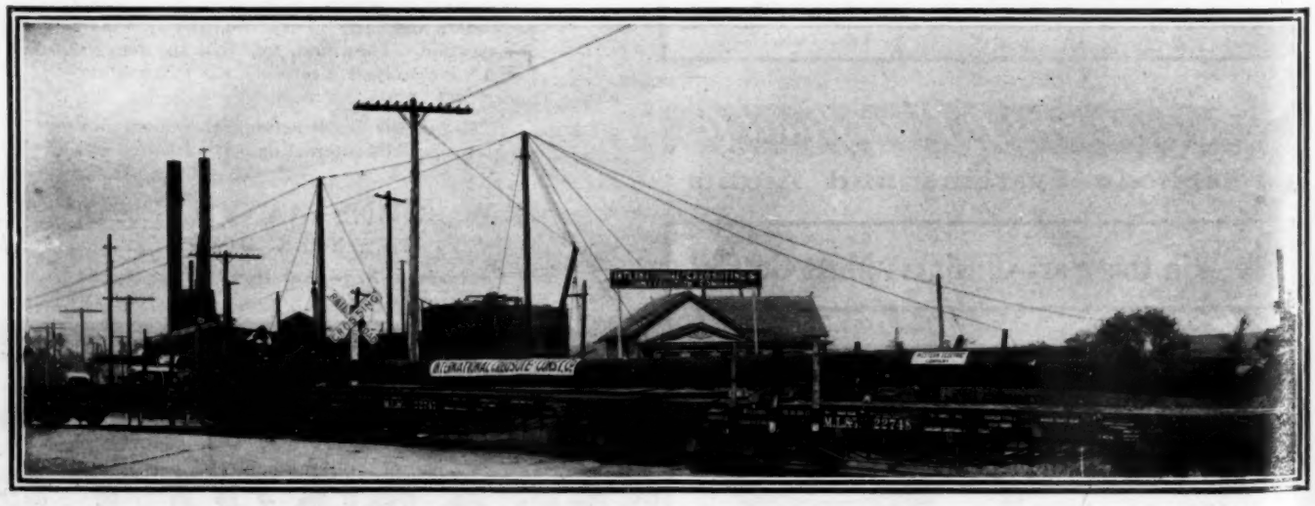
The International company has been supplying creosoted poles to the trade for many years. Because of the strength and lasting qualities of creosoted pine, their use is not confined to the territory of their production but from all sections of the United States west of the Rocky Mountains, Canada, Mexico, Central and South America, the demand is constantly increasing.

Paragraphs.

CHARLES A. MCCUNE has resigned his position as chief engineer of the Commercial Acetylene Co. to become sales engineer with the Page Steel & Wire Co., 30 Church street, New York, where his efforts will be devoted to sales and service in connection with Armco welding rods.

FAULTLESS ANCHOR & MFG. CO., Findlay, Ohio, is the successor to the Faultless Anchor Co., formerly located at Fostoria, Ohio. The shop space at Findlay is ten times as large as that at Fostoria. With the increased facilities the company promises to handle all orders promptly.

Pole on East Side of River at Beaumont.



Two 110-foot Poles Creosoted Ready for Shipment to Shreveport, La.

Bargains for Quick Buyers

1,000 New, Corwin double pole direct current receivers, at each	$ 0.50
400 New, Corwin Inter-Com. desk sets, complete, with 4 cond. cord, at each	3.00
1,000 New, Sterling ringers, 1000 or 1600 ohm, at each	.75
500 New, Kellogg or Strombergs, 100 ohm double gong, D. C., bells, at each	.50
1 Warner pole changer	10.00
1 Weston round pattern ammeter, scale 0-5	10.00
1 Weston round pattern voltmeter, scale 0-15	10.00
1 Holtzer-Cabot frequency meter	50.00
1 Weston D. C. portable mili-voltmeter, scale 0-140	30.00
1 Weston portable A. C. and D. C. voltmeter, with shunt box, scale 0-120	60.00
1 Whitney portable A. C. ammeter, scale 0-1 in tenths	25.00
1 Weston portable D. C. voltmeter, scale 0-24	25.00
1 Ballistic galvanometer, complete	75.00
1 Young & Company resistance box 0-1/100 ohms	10.00
1 Resistance box 61,500 ohms	15.00
1 Resistance box 1,000,000 ohms	15.00
1 Leeds standard condenser	25.00
1 Leeds resistance box, round pattern bridge 0-10,000	20.00
60 Pounds No. 80-E Phonic carbon, lb.	2.50

All the above guaranteed to be in first class condition.

Corwin Telephone Mfg. Company
LAFAYETTE, INDIANA

Makes those difficult jobs easy, and does more work in less time. You don't have to bother with soldering flux as it is within the solder.

Sold in 1 lb. coils; on 1, 5 and 10 lb. spools; also in 18 inch sticks.

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PIGNOLET Portable Testing Meters will locate any kind of trouble besides measuring volts and amperes; will also determine resistance of coils, lines, ringers, etc.

VOLTMETERS
AMMETERS
VOLT-AMMETERS

Suppose you let us send you a copy of the PIGNOLET Catalogue. It's worth while.

L. M. PIGNOLET
80 Cortlandt Street New York
Medal Panama-Pacific International Exposition

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

12. Reverse Sweep—Reverse sweep and two way sweep, meaning a sweep in two planes, is permitted, provided a straight line drawn from the center of pole at top to center of pole at ground line does not leave the pole at any point.

13. One Way Sweep—One way sweep is permitted provided it does not exceed maximum shown in Table No. 3.

14. Method of Measuring Sweep—That part of the pole below the ground line not to be taken into consideration. Tightly stretch a tape line from point at the ground line (see paragraph 15) on the side of the pole where the sweep is greatest to the upper surface at the top of the pole, and having so done, measure widest point from tape to surface of pole and if, for illustration, upon a 30-foot pole the widest point does not exceed 4 inches, this pole shall be accepted.

15. Explanation of Term "Ground Line"—The term "ground line" as used in these specifications shall mean a point on the pole a distance of 4 feet on 20-foot, 5 feet on 25-foot and 30-foot, and 6 feet on 35-foot and longer poles from the extreme butt.

TABLE No. 1—MINIMUM TOP MEASUREMENT.

Top Designation. Inch.	Circumference.
4	12
5	15
6	18½
7	22
8	25
9	28
10	31

TABLE No. 2.

Poles 35 inches and longer shall have a minimum circumference measurement at extreme butt as follows:

Length. Feet.	7″ Top. Inch.	8″ Top. Inch.	9″ Top. Inch.	10″ Top. Inch.
35	33	36	39	42
40	34	37	40	44
45		39	42	45
50		41	44	47
55		42	45	48
60		44	47	50
65		45	48	51
70		47	50	53
75		48	51	54
80		50	53	56
85		51	54	57
90		52	55	58

TABLE No. 3.

Length of Pole. Feet.	Maximum Sweep Between Top and Ground Line. Inches.
20	3
25	3
30	4
35	5
40	5½
45	6
50	7
55	8
60	9
65	10
70	10½
75	11
80	12
85	13
90	14

Kellogg Test Set in Action.

Kellogg Test Sets on the Battlefield in Europe.

Thousands of the famous Kellogg field or test sets are with the allied armies. Sixty-five of these telephones are now in use by one regiment alone, this being the 149th field artillery, the Illinois unit.

In the accompanying illustration is shown a detachment of the 11th Illinois infantry equipped with one of the Kellogg field sets, a portable reel, and line As they were unable to secure any patterns, much less buy one of these reels, they had made up a reel which has now been in use for over six months, giving very satisfactory service. It carries about 600 feet of special weatherproof insulated wire. The reel end of the wire is caught around a screw head on the center of the drum and carried out to two holes on one side to a couple of screw connectors.

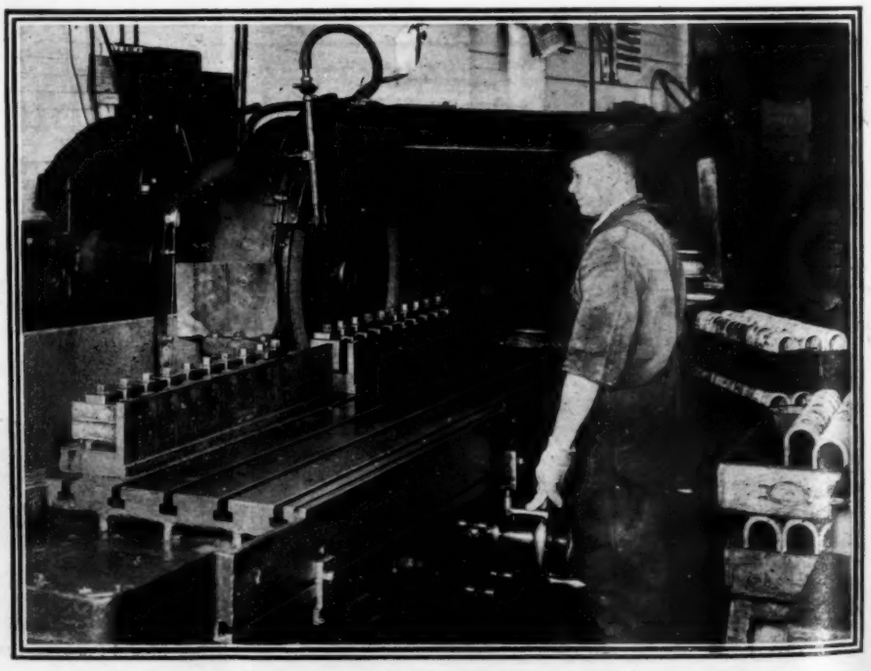
The set is connected by having a yard length of the wire attached to the telephone sets in the ordinary way, the other end being provided with a pair of Fahnestock clips, which are fastened to the terminals on the drum. This reel, with two men, one carrying the set, can be gotten out and communication established in an incredibly short time.

With this method, of course, any amount of wire can be unreeled and communication established promptly. Regular army message blanks are used. In taking up the wire, the man carrying the reel also carries the set by means of a sling, the extra man in this case handling the drum with both hands and the wire can be returned to the reel in short order.

Speeding Production With Man-Power Saving Devices.

Conservation of man-power and multiplication of individual effort by the adoption of the labor-saving machinery of every description, constitutes the policy of the management of the Stromberg-Carlson Telephone Mfg. Co. Doing a business five times as large as in 1914, this company is now meeting its demands for increased production with about twice the number of employes that it had four years ago.

The illustration shows one of a group of new grinding machines recently in-



Grinding Machine Which Does Work of Eight Men.